

SECRET

21 June 1962

ERRATA

The following errors have been located in the List of Selected Targets:

Target No. 2: Location should be revised to conform with the location as newly ascertained. 21-33-30 / 105-52-20

Target No. 9: Location should be revised to conform with the location as newly ascertained. The mention of a planned capacity of 36,000 kw of Target No. 9 follows the suggestion of a competent analyst, but does not accord with the statement on page 7, lines 38-39. It is also not in accordance with the use of a 24,000 kw figure in the Special Supplement, which was checked against another type of data by another competent analyst. The figure of 36,000 should come out. *21-36-35 / 105-49-15*
Val. to phan: "with ---- kw."

Target No. 23a: The longitude should be revised from 105-53-24E to read 105-53-27E.

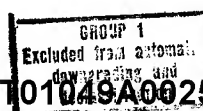
Target No. 25a: The latitude should be revised from 21-03-57N to read 21-03-08N.

~~Target No. 25c: The BE Target Number should probably be revised from 0616-0000 to read 0616-0038, following a secondary source of recent date.~~

Target No. 30c: The latitude should be revised from 21-34-50N to read 21-35-14N.

Target No. 30a through d: The word "Thai" should be inserted before "Nguyen" in line 4.

Target No. 2: Under 8th heading ("Early Targets of Opportunity")
 change "Two railway bridges" to read "three railway bridges."

SECRET

S-E-C-R-E-T

Target No.: 2 Priority A; Industrial
Name: Thai Nguyen Iron and Steel Plant

25X1A

Location: 21-33-30N
105-52-20E

Reason for Selection: Under construction; loss would constitute blow to Communist pride because plant is the most ambitious and costly Chinese aid project; area scheduled to become the primary heavy industrial center of North Vietnam.

Surroundings: Immediate construction area extensive, with little village settlement remaining in the immediately surrounding area; large number of temporary buildings nearby may include worker dormitories.

Possible Negative Results: Depends on amount of physical damage; serious delays in construction could be caused; damaged construction equipment would be difficult to replace. Construction force in general area probably remains large, but casualties likely to be few in immediate vicinity of completed construction.

Nearby Targets of Opportunity: Railway terminal and three railway bridges nearby; storage facilities of target 30; further study of area needed.

Graphics: Figures 1, 5-a.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 9 Priority B; Industrial

Name: Thai Nguyen Thermal Power Plant

25X1A

Location: 21-36-35N
105-49-15E

Reason for
Selection: New plant, just completed; will serve iron and steel
plant under construction; already connected to grid;
plant is the key facility of target 2.

Surroundings: Within extensive construction area; few casualties
likely.

Possible Negative
Results: See target 8.

Nearby Targets
of Opportunity: See target 2.

Graphics: Figures 1, 5-a.

S-E-C-R-E-T

S-E-C-P-E-T

Target No.: 23a Priority C; Logistic

Name: Hanoi/Gia Lam Airfield

25X1A

Location: 21-02-10N
105-53-27E

Reason for
Selection: Most frequently used airfield, especially in
current airlift, petroleum products and possibly
ammunition storage; other facilities include Air
Defense Headquarters and associated transmitters;
their destruction would leave military with no
effective air defense reporting and control capability.
Concrete surface.

Surroundings: Nearby villages apparently not in critical proximity.

Possible Negative
Results: Moderate damage readily repaired, except that
incurred by locally irreplaceable communications,
repair, control, or storage facilities; few
casualties likely.

Nearby Targets
of Opportunity: See target 22.

Graphics: Figures 1, 2, 5-p.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 25a Priority C; Logistic

Name Hanoi Army Supply Depot, North Tay Ho

25X1A

Location: 21-03-08N
105-50-50E

Reason for
Selection: Appears to be a major storage area, located on the
south side of the Red River above the Doumer Bridge
(target 15); includes 224 large and 35 small storage
buildings.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 30a through d Priority C; Logistic

Name: Thai Nguyen Army Supply Depots

25X1A

[REDACTED] apparently covering supply depots in Thai Nguyen area)

Location: See individual targets.

Reason for Selection: The Thai Nguyen area may contain a considerable number of other storage areas; those selected probably most important. Because of coal and iron-ore mining and large amount of construction activity in the area, the actual ground situation may be more complex than can be indicated here.

Surroundings: Targets 30-a and 30-b probably near villages but greater isolation probable for targets 30-c and 30-d.

Possible Negative Results: Consequences of partial success a matter of luck; would serve to reduce stockpiles at this important rear storage area; numerous nonmilitary casualties unlikely.

Nearby Targets of Opportunity: See target 2; other acceptable military storage may exist.

Graphics: Figures 1, 5-cc, 5-dd.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 30c Priority C; Logistic

Name: Thai Nguyen Army Supply Depot
Supply Depot East

25X1A

Location: 21-35-14N
105-57-25E

Reason for
Selection: Contains 102 storage and support buildings.

S-E-C-R-E-T

Corrected pages sent to all recipients. All copies held by

St/P/C have been corrected 27 June 62
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Control Staff

Control Sheet

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TRANSMITTAL SLIP		DATE 27 Jun 62
TO:		
ROOM NO.	BUILDING	
REMARKS: The attached pages are to replace those in: Selected Targets in North Vietnam, 13 June 1962 Please destroy the pages that have been corrected.		
FROM: St/P/RR—Control		
ROOM NO. 4F41	BUILDING Hdqs.	EXTENSION 5160
FORM NO. 241 1 FEB 55	REPLACES FORM 36-8 WHICH MAY BE USED.	GPO : 1957—O—439445 (47)

S-E-C-R-E-T

Target No.: 30a through d Priority C; Logistic

Name: Thai Nguyen Army Supply Depots

25X1A

[REDACTED] apparently covering supply depots in Thai Nguyen area)

Location: See individual targets.

Reason for Selection: The Thai Nguyen area may contain a considerable number of other storage areas; those selected probably most important. Because of coal and iron-ore mining and large amount of construction activity in the area, the actual ground situation may be more complex than can be indicated here.

Surroundings: Targets 30-a and 30-b probably near villages but greater isolation probable for targets 30-c and 30-d.

Possible Negative Results: Consequences of partial success a matter of luck; would serve to reduce stockpiles at this important rear storage area; numerous nonmilitary casualties unlikely.

Nearby Targets of Opportunity: See target 2; other acceptable military storage may exist.

Graphics: Figures 1, 5-cc, 5-dd.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 25a Priority C; Logistic

Name Hanoi Army Supply Depot, North Tay Ho

25X1A

Location: 21-03-08N
105-50-50E

Reason for
Selection: Appears to be a major storage area, located on the
south side of the Red River above the Doumer Bridge
(target 15); includes 224 large and 35 small storage
buildings.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 23a Priority C; Logistic

Name: Hanoi/Gia Lam Airfield

25X1A

Location: 21-02-10N
105-53-27E

Reason for Selection: Most frequently used airfield, especially in current airlift, petroleum products and possibly ammunition storage; other facilities include Air Defense Headquarters and associated transmitters; their destruction would leave military with no effective air defense reporting and control capability. Concrete surface.

Surroundings: Nearby villages apparently not in critical proximity.

Possible Negative Results: Moderate damage readily repaired, except that incurred by locally irreplaceable communications, repair, control, or storage facilities; few casualties likely.

Nearby Targets of Opportunity: See target 22.

Graphics: Figures 1, 2, 5-p.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 9 Priority B; Industrial

Name: Thai Nguyen Thermal Power Plant

25X1A

(see target 2)

Location: 21-36-35N
105-49-15E

Reason for
Selection: New plant, just completed; will serve iron and steel
plant under construction; already connected to grid;
plant is the key facility of target 2.

Surroundings: Within extensive construction area; few casualties
likely.

Possible Negative
Results: See target 8.

Nearby Targets
of Opportunity: See target 2.

Graphics: Figures 1, 5-a.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 2 Priority A; Industrial

Name: Thai Nguyen Iron and Steel Plant

25X1A

Location: 21-33-30N
105-52-20E

Reason for Selection: Under construction; loss would constitute blow to Communist pride because plant is the most ambitious and costly Chinese aid project; area scheduled to become the primary heavy industrial center of North Vietnam.

Surroundings: Immediate construction area extensive, with little village settlement remaining in the immediately surrounding area; large number of temporary buildings nearby may include worker dormitories.

Possible Negative Results: Depends on amount of physical damage; serious delays in construction could be caused; damaged construction equipment would be difficult to replace. Construction force in general area probably remains large, but casualties likely to be few in immediate vicinity of completed construction.

Nearby Targets of Opportunity: Railway terminal and three railway bridges nearby; storage facilities of target 30; further study of area needed.

Graphics: Figures 1, 5-a.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 30c Priority C; Logistic

Name: Thai Nguyen Army Supply Depot
Supply Depot East

25X1A

Location: 21-35-14N
105-57-25E

Reason for
Selection: Contains 102 storage and support buildings.

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SELECTED TARGETS IN NORTH VIETNAM

13 June 1962

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SELECTED TARGETS IN NORTH VIETNAM

Summary and Conclusions

The economy of North Vietnam is based primarily on agriculture. Only in recent years have attempts been made to establish an industrial base for the country. The industrialization program has called forth considerable effort and enthusiasm on the part of the leadership, vigorous work and privation on the part of the population, and large-scale financial and technical assistance on the part of the other countries of the Sino-Soviet Bloc, principally Communist China and the USSR.

The logistics system of North Vietnam is rudimentary and is based primarily on meager railroad connections with China, over which imports are received from other Bloc countries; the port of Haiphong, through which import and export traffic moves; a road network supplementing the railroad system; and other roads that extend into the hinterland and into Laos. The movement of military supplies into Laos by road has been supplemented by an airlift maintained by Bloc aircraft during the last year and a half. At the site of the transmission facilities for Radio Hanoi at Me Tri, there also are facilities for the main point-to-point radio transmitting facilities for the North Vietnamese Army.

There are a limited number of installations in industry and in the logistics system that could be attacked for the significant psychological effect to be gained in a "show of force" by aircraft armed with high-explosive and incendiary bombs. It is believed that serious damage to the targets listed in Priority Group A, below, would have the greatest psychological effect on the leadership in North Vietnam and to some extent on the civilian population while holding casualties among the civilian population to a minimum.

Radio Hanoi transmission facilities, located at Me Tri, are recognized as a special case. The pro's and con's of attacking this target are discussed below (see pp.16 and 17, below).

The symbolism associated with each of the major industrial installations (which represent all of the heavy manufacturing industry as it exists in North Vietnam) and the Doumer railroad/highway bridge at Hanoi is such that a decisive blow against them could well be so sobering as to inhibit the desire of the North Vietnamese leadership to continue aggression in Southeast Asia other than with complete support from Sino-Soviet Bloc partners.

On the other hand, the psychological impact of a "show of force" could be negative from the US point of view. It might so arouse national resentment as to unite the country in favor of a more aggressive posture. Such a reaction could result through a combination of the following factors: superficial damage to the selected targets, excessive civilian casualties, or misfortune in timing relative to simultaneous but independent diplomatic, political, or military developments elsewhere.

To curtail sharply industrial activity and to disrupt temporarily the ability of North Vietnam to receive economic aid from the rest of the Sino-Soviet Bloc, targets listed in Priority Group B, below, also should be neutralized.

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Neutralization of all targets listed in Priority Groups A, B, and C, below, would eliminate most industrial activity in North Vietnam and would begin to make inroads on the capability of the logistics system to support military as well as economic activity.

Experience during World War II and the Korean police action suggests that the high-explosive and incendiary tonnage required continuously to interdict the military and economic logistics system of a country requires sizable bomber forces. Similarly the neutralization of heavy industrial plants requires heavy initial tonnages. This brief paper does not consider individual target vulnerabilities, recognizing that these are largely a function of over-target delivery capabilities.

Selected Targets in North Vietnam

<u>Name of Target</u>	<u>Target Number*</u>
<u>Priority Group A</u>	
<u>Industrial Targets</u>	
Hanoi Machine Tool Plant	1
Thai Nguyen Iron and Steel Plant	2
Haiphong Cement Plant	3
Viet Tri Chemical Plant	4
<u>Targets in the Logistics System</u>	
Doumer Bridge	15
<u>Priority Group B</u>	
<u>Industrial Targets</u>	
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<u>Targets in the Logistics System</u>	
Dap Cau Railroad/Highway Bridge over the Song Cau	16
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Viet Tri Railroad/Highway Bridge over the Claire	18
Ninh Binh Railroad/Highway Bridge over the Song Day	19
Hanoi Railroad/Highway Bridge over the Canal des Rapides	20
Haiphong Petroleum Products Storage Area	21
Hanoi Petroleum Products Storage, Thanh Am	22

* For a complete list of selected targets, see II, below.

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Priority Group CIndustrial Targets

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Targets in the Logistics System

Hanoi/Gia Lam Airfield	23a
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Haiphong/Kien An Airfield	24b
Hanoi Army Supply Depot, North Tay Ho	25a
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Accompanying this paper is a graphic supplement containing Appendix A, Geographic Locations of Selected Targets (Maps), and Appendix B, Graphic Presentation of Selected Targets (Photographs). Appendix A contains maps for all targets, with emphasis on the Hanoi-Haiphong area; Appendix B contains illustrative photographic materials which have been assembled to the extent of their immediate availability. The pace of development in North Vietnam has been such in recent years that some of these targets have had little previous attention, and the quality and uniformity of the annexed photographic materials varies considerably.

Of the 31 photostatic reproductions of published, partly annotated aerial photography presented under Figure 5, even the poorest convey some useful information of a general type regarding extent of concentration or dispersion of facilities, proximity and density of nearby settlement, arrangement of road patterns, and length and width of the target. Excellent up-to-date photographic prints could be obtained in a short time for any of these 31 target localities.

The 10 photographic prints of some of the same targets usefully supplement the photostats and help to present the character of the physical surroundings of the targets selected. Two illustrations of telecommunications targets are presented to round out the coverage to the extent possible.

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I. Basis for the Selection of TargetsA. Industrial Targets1. The Economy of North Vietnam

Since 1955 the Communist regime in North Vietnam, the Democratic Republic of Vietnam (DRV), has dedicated itself to the establishment of a strong Communist state through the rapid industrialization of its economy. The monopoly of political power possessed by Ho Chi Minh and his colleagues has enabled the regime to mobilize the manpower and natural resources of North Vietnam in a manner not undertaken in the past. The DRV thus has been able to initiate a program for industrial expansion that is ambitious not only in comparison to past efforts but also in comparison to the industrial programs of most other underdeveloped countries. To date, this program of forced-draft industrialization has met with considerable success. New modern industries in North Vietnam now include the machine building industry, the chemical industry, food processing industries such as rice milling and sugar refining, and other light industries such as plastics, enamelware, office supplies, and soap. Important pre-war industries such as cement and textiles have been further expanded. Finally, the first modern iron and steel plant in Southeast Asia now is under construction in North Vietnam. Primarily as a result of these new additions to capacity, production of industry* has increased at an average annual rate of about 32 percent since 1956.

In spite of the large percentage increases in production, however, industry in North Vietnam in absolute terms remains small, and the economy still remains overwhelmingly agricultural. Approximately 85 percent of the population is still engaged in agriculture -- which furnishes the bulk of the food consumed, supplies most of the raw materials for light industry, and provides the major exports of the country. Whereas in 1960 agriculture contributed roughly half of North Vietnam's gross national product (GNP), industry accounted for less than 10 percent of GNP. Of the total value of industrial production, moreover, almost two-thirds originated in light industry, mainly the textile and the food processing industries. Heavy industry contributed less than 4 percent of GNP. Mining and electric power aside, North Vietnam's heavy industrial sector still consists of but a handful of industrial facilities -- a machine tool plant, a railroad repair shop, three or four shipyards, several small chemical plants, a cement factory, a prefabricated concrete factory, and scattered brick and tile establishments. Other major plants -- most notably the Thai Nguyen iron and steel plant -- are still under construction.

These few heavy manufacturing plants plus North Vietnam's electric power facilities would seem to be the most telling targets for a limited bombing action against North Vietnam. In the first place, they are North Vietnam's modern heavy industry. The neutralization of a limited number of these important plants thus could virtually eliminate most of the heavy industrial production in the country. Furthermore, these plants constitute the very core of the DRV's all-out industrialization effort. Since 1955 the regime has allocated no less than two-thirds of total state investment in industry to the restoration and expansion or new construction of these heavy industrial plants. During 1955-60 this investment in heavy industry represented nearly one-fourth of the total investment in all sectors of the economy, but of the total gross domestic investment of 800 million

* The term industry as used in this paper refers to modern industry; it does not include handicraft production.

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dong (21 percent of GNP) in 1960, more than 200 million dong (5 percent of GNP) was invested in heavy industry.* The overwhelming priority of heavy industry in the investment program of the state has meant the sacrifice of investment in those other sectors -- such as agriculture, light industry, health, education, and housing -- that support the level of living. The virtual loss of these major heavy industrial facilities thus would deprive the Vietnamese of the fruit of 7 years of hard labor.

2. Target Categories

a. Priority Group A

On the assumption that the purpose of such a limited aerial bombing of North Vietnam is primarily a show of force intended more to impress the Vietnamese than to disrupt the economy, industrial targets of the first priority have been selected under Priority Group A and include North Vietnam's four major heavy manufacturing plants -- the Hanoi Machine Tool Plant (target 1),** the Thai Nguyen Iron and Steel Plant (target 2), the Haiphong Cement Plant (target 3), and the Viet Tri Chemical Plant (target 4). Because of their importance as symbols of the country's industrial accomplishment, the destruction of these plants should have the maximum psychological impact on the Vietnamese. Like the impressive Doumer Bridge in Hanoi, these four modern industrial facilities are a source of great national pride. In particular, the psychological impact of severe damage to the Thai Nguyen Iron and Steel Plant (target 2) would contribute to frustration of the Communists' plans for an iron and steel industry, a prestige industry that no other country in Southeast Asia yet boasts. A more detailed discussion of the reasons for the selection of each of the four industrial targets in Priority Group A follows.

(1) Hanoi Machine Tool Plant

As North Vietnam's only modern machine building plant and the largest Soviet aid project, the Hanoi Machine Tool Plant (target 1) is the DRV's most important industrial facility now in production. Financed and equipped entirely by the USSR, it was constructed over a period of 2 1/2 years at a cost of approximately \$4.5 million. Inaugurated in April 1958, it now is reported to be producing a narrow range of light metalcutting machine tools and other machinery including mechanical irrigation pumps, simple reaping and sowing machines, threshing machines, concrete mixers, small-size electric motors, and conveyors. Located in the outskirts of Hanoi, the plant covers about 52,000 square meters, has 25 buildings plus living quarters, and employs approximately 2,500 workers. The plant was chosen as the number 1 priority industrial target -- in spite of its location in a heavily populated area -- primarily because of its intrinsic importance as North Vietnam's largest, most modern factory. In 1960, production of this single machine tool plant represented 5 percent of the total value of industrial production in North Vietnam, and its symbolic importance exceeds its economic importance.

(2) Thai Nguyen Iron and Steel Plant

The most ambitious and expensive of North Vietnam's industrial undertakings -- the Thai Nguyen Iron and Steel Plant (target 2) -- is still under construction after nearly 2 years in progress. Estimated to

* Dong values in this paper may be converted to US dollars at the rate of 4.0 dong to the dollar.

** Target numbers throughout the text refer to the various targets as listed in the graphics; they do not imply an order of priority.

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represent an investment of approximately US \$15 million to \$.20 million (first stage), the plant is being constructed with Chinese Communist aid. Although still far from completion, construction of the project has progressed far enough to recommend its selection as the number 2 priority industrial target. The first of three blast furnaces scheduled for construction should be in operation by the end of this year. The building that will house two crude steel-producing converters also is now under construction. The severe damage of these installations would be more than a loss of 2 years of investment to the North Vietnamese, who have counted on the establishment of a modern iron and steel industry (with an initial output of 100,000 tons of steel) by the end of the First Five Year Plan (1961-65). In a real sense the country's prestige has been committed to the successful completion of the plant by 1965. A blow to these plans would be a blow to the national pride. An attack on the Thai Nguyen Iron and Steel Plant (target 2) is not thought to involve any undue damage to the civilian population. Located outside the town of Thai Nguyen, the plant is close to the large, open iron and coal mines. The greatest loss of life would be that of the large construction work force.

(3) Haiphong Cement Plant

North Vietnam's single cement plant, located at Haiphong, is the second most important industrial installation in the country. One of the largest producers of cement in Southeast Asia, the Haiphong Cement Plant (target 3) contributes roughly 5 percent of the total value of industrial production in North Vietnam. As much as 50 percent of its total production is exported, making cement the DRV's third most important export, after rice and coal. Understandably the plant is very much of a prestige symbol within the country. During the period of recuperation, exports of cement undoubtedly would fall sharply, and construction of many key projects would be substantially delayed. At a time of serious balance-of-payments difficulties, North Vietnam can ill afford even a temporary loss of a major foreign-exchange earner.

(4) Viet Tri Chemical Plant

As a major industrial policy, the regime has promoted the regional dispersion of industry. The most important of the newly emerging industrial centers is the one at Viet Tri, some 50 miles northwest of Hanoi. In the midst of its current economic difficulties, the DRV clearly took great pleasure in formally inaugurating this Viet Tri Industrial Area on 18 March 1962. The inauguration, widely covered in the press, was reported to have "brought high enthusiasm and pride to every North Vietnamese." In any case, it certainly provided a large and much-needed shot of confidence to the regime, and the psychological impact of its destruction would be great. Of the eight plants now in production at Viet Tri (a chemical plant, an electric powerplant, a mechanical sawmill, a brick mill, a paper plant, a rice mill, a sugar refinery, and a distillery), the chemical plant and the electric powerplant are by far the most important. Although only a small plant, the Viet Tri Chemical Plant (target 4) nevertheless constitutes North Vietnam's entire modern chemical industry. Thus both as a prestige symbol and as an important new contribution to the economy, the chemical plant ranks as a major industrial facility. Its selection as the fourth most important industrial target was reinforced by the consideration of minimum casualties among the civilian population. Built on an area stretching for more than a mile along the Red River (at the junction of the Claire River), the Viet Tri Industrial Center is bounded by the Hanoi - Lao Kay railroad and highway route 2 on its other side.

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One particular feature of all of the four heavy industrial facilities in Priority Group A -- the fact that they are all major Sino-Soviet Bloc economic aid projects -- could well have a direct bearing on the Bloc's reaction to their bombing. The precise nature of this Bloc response is beyond the scope of this paper.

b. Priority Group B

The six industrial targets in Priority Group B were selected because of their direct relation to immediate total "factory" industrial production.

Because installed electric power capacity in North Vietnam is extremely small, serious damage to the few key powerplants could effectively deny the Vietnamese the power that is essential to industry. If the objective of a limited bombing effort is primarily the disruption of the North Vietnamese economy, the most important industrial targets would be those five large powerplants that supply more than one-half of North Vietnam's total electric power production. These five plants constitute all of North Vietnam's main electric power grid,* including the important industrial and urban areas of Hanoi, Haiphong, Viet Tri, and Thai Nguyen. It would be essential, of course, to neutralize all the plants in the grid to deny effectively electric power to the grid system. Otherwise, those plants still in production could partly compensate for production that has been eliminated. The relative importance of each of these plants to the main grid is presented below.

<u>Thermal Powerplant</u>	<u>Installed Capacity (Thousand Kilowatts)</u>	<u>Percentage Contribution to the Grid</u>
Hanoi (target 5)	22.5	34
Haiphong at Haiphong Cement Plant (target 6)	12.0	17
Haiphong (target 7)	6.0	9
Viet Tri (target 8)	16.0	23
Thai Nguyen (target 9)	12.0	17

In addition to the five plants listed above, the Uong Bi Thermal Powerplant (target 10) has been included on the list of industrial targets under Priority Group B. Although still not in production, this new plant could be rushed to completion in the event of a power shortage. With a planned capacity of 24,000 kilowatts (kw), it would be North Vietnam's largest electric powerplant. It is expected to be connected to the grid by the time that production begins.

In summary, serious damage to all these important electric powerplants would have an immediate effect on North Vietnam's industrial production. Probably no less than two-thirds of the total industry is dependent on production of electric power in these few plants.

* The Hon Gay powerplant also may be connected to this main grid. Because of the long distances involved, however, this plant could supply only a very small amount of power to the main industrial centers served by the main grid.

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c. Priority Group C

It is recognized that Priority Group C targets, by definition, are of lesser economic, military, and psychological value than those listed in categories A and B. They are included here largely for information and reference purposes.

The four industrial facilities in Priority Group C were selected as extending and deepening the target recommendations in categories A and B. The three electric powerplants in the third priority group, added to the six powerplants discussed above, account for almost three-fourths of North Vietnam's total installed electric power capacity. The Hon Gay Thermal Power Plant (target 11), in particular, supplies electric power to the coal mines in the Hon Gay - Cam Pha coal mining region. The most important heavy industry in North Vietnam, these coalfields produce annually more than 2.5 million tons* of anthracite coal and provide North Vietnam's second most important export.

The Ben Thuy Thermal Powerplant (target 12) was included primarily to provide a regional balance among the selected targets. With an estimated installed capacity of 8,000 kw, it supplies electricity to Vinh, an expanding industrial center and an important military staging area. The Nam Dinh Thermal Powerplant (target 13) is the sole source of supply for the large Nam Dinh Textile Plant, North Vietnam's most important light industrial enterprise. In 1960, production of this single plant contributed more than one-fourth of the total value of North Vietnam's industrial production. The textile plant itself is not on this target list, because it is located in a heavily populated area and because its production is largely for civilian consumption.

Production of transportation equipment in North Vietnam is insignificant. All locomotives, heavy rolling stock, and vehicles must be imported; only a few railroad repair shops engage in limited production of light railroad freight cars. Most important of these are the Gia Lam Railroad Repair Shops (target 14) in Hanoi. Because no more than 8 to 10 railroad locomotives and 100 cars are likely to be in these shops for repairs at any one time, a successful attack on the plant would do little in the way of seriously damaging North Vietnam's inventory of rolling stock. A more effective system for interdicting North Vietnam's rail capability would be the targets along the major routes (see B, p. 9, below). The Gia Lam shops, however, are of some target importance because of the expected psychological impact, if not for the economic effect, for they are one of only a few heavy industrial plants in North Vietnam.

* Tonnages are given in metric tons throughout this paper.

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B. Targets in the Logistics System1. The Logistics System of North Vietnam

Civilian transport in North Vietnam, both primitive and modern, carried about 15 million tons of goods in 1961, of which the railroads accounted for 22 percent, highway transport 39 percent, inland waterways 37 percent, and coastal shipping 2 percent. Civil air transport performed a negligible proportion of the total transport. The same forms of transport make up the logistics system for the military, with possibly the largest share of traffic being carried by the railroads and highways and the least by inland water transport. Military air transport also is important in the logistics system.

In 1961 the rail network included about 540 miles of single-track meter-gauge lines. The network consisted of five lines radiating from Hanoi, all of which are important logistically. The most important is the Hanoi - Dong Dang line, which provides the most important international connection with Communist China. Transloading facilities between the Chinese standard-gauge line and the North Vietnamese meter-gauge line are located at P'ing-hsiang, about 10 miles inside Kwangsi Province of Communist China. Because of the heavy economic and military traffic carried on this line, construction is underway to increase the capacity of this line, possibly by changing it to standard gauge.

The second line connects Hanoi with Haiphong, the major seaport and the second largest industrial city in North Vietnam. Imported goods that arrive on either of these two lines can be moved farther toward the Laos border by rail on the third line, which extends northwest from Hanoi along the Red River to Lao Kay on the Chinese border, or on the fourth line extending south from Hanoi, the former Hanoi-Saigon line, which is operating as far as Ham Rong on the north bank of the Song Ma River.

The fifth line is the new 34-mile line that has been completed to Thai Nguyen where a steel complex is under construction and a military supply depot is located. Because there are no rail connections to other Southeast Asian countries, materials that are moved farther south in North Vietnam and to neighboring countries are moved by road, by air, or by coastal shipping.

The primary road network also radiates from Hanoi, paralleling the railroad lines and extending into areas not served by the rail network. Of about 6,200 miles of motorable roads, at least 650 miles are all-weather surfaced roads. On the whole, the North Vietnamese road system can be characterized as of limited capacity and subject to serious deterioration during the rainy season. The most important road is route 1, which roughly parallels the coast from Dong Dang on the border of Communist China through Hanoi to the 17th parallel. Haiphong is connected with this route by a road to Hanoi and another extending southwest to a junction with route 1 at Ninh Binh. Farther south, route 1 connects with route 7, the principal road into the Plaine des Jarres area of Laos. It is believed that route 7 has been improved in the past 2 years to an all-weather route and may be the only such route into Laos. Roads leading to northern Laos from either Hanoi or from the Hanoi - Lao Kay rail line also have been improved, but they probably are not all-weather routes. When roads are not usable in the rainy season and where

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there are no motorable roads, animals, humans, and small river and coastal craft as well as aircraft are used to penetrate Laos and South Vietnam.

North Vietnam has 21 civil airfields with runways ranging in length from 2,000 to 8,000 feet that are adequate for supporting piston-engined transports, such as the Il-14 (Crate) and the Li-2 (Cab) aircraft, which are being used for the USSR/DVR airlift to Laos. Of the 21 airfields, however, 9 airfields are of primary importance because of their operational capability and location. Five of the airfields are used regularly by light transport aircraft in civil operations, and seven now are used in the airlift. The Hanoi/Gia Lam Airfield is the major operating base for the airlift and can support limited operations of turboprop transports, but the Haiphong/Cat Bi Airfield, with a concrete runway of about 8,000 feet, is the only field in North Vietnam capable of supporting jet or turboprop transports, such as the An-12 (Cub) aircraft, in a sustained operation.

Ports in North Vietnam include 1 principal port, Haiphong; 2 secondary ports, Cam Pha and Hon Gay; and 10 minor ports. Haiphong is located 13 miles up the Cua Cam, which has a fairway depth maintained at 24 feet by dredging. Normally between 30 and 50 foreign vessels call at Haiphong each month, with about one-half of these being Free World vessels. At present it is reported that six Liberty-type vessels can be accommodated at the wharves simultaneously. Hon Gay and Cam Pha, which are both coal ports located on the Gulf of Tonkin north of Haiphong, can accommodate cargo vessels with drafts of less than about 18 feet. These two ports are connected to the inland transport system by road. Of the minor ports, probably only one, Ben Thuy -- which is the port city for Vinh and is located about 30 miles from the terminus of road route 7, which leads to Laos -- is of significance logistically. Small North Vietnamese and Chinese coastal vessels make regular trips from Haiphong down the coast to Ben Thuy.

North Vietnam has allocated 25 percent of state investment in fixed assets to transportation and communications since 1955, indicating the importance that the leaders attach to having adequate service for the economy and for the movement of military supplies. North Vietnam also has received assistance for transport construction from other Sino-Soviet Bloc countries, particularly from Communist China and the USSR. Serious damage to important bridges, which probably are the most costly and time-consuming structures of the transport system to build, would represent a great loss of past investment and would effectively hinder the reconstruction of the transport system itself and of all other targets that might be damaged.

2. Target Categories

a. Priority Group A

The highest priority target in the logistics system of North Vietnam, from the point of view of psychological impact, is the 5,520-foot Doumer Bridge (target 15) over the Red River at Hanoi. This combination rail-highway bridge, which was constructed in 1902, is the longest in North Vietnam and one of the longest in the Far East. In the eyes of the North Vietnamese it undoubtedly is a symbol of national prestige much the same as the George Washington bridge in the US, even though the Doumer Bridge was built long before the country attained independent status. Its serious damage would isolate Hanoi from the major part of the railroad system located northeast of the Red River and would make it impossible for Hanoi to receive rail shipments directly from the port of

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Haiphong or from Communist China via either Dong Dang or Lao Kay. Successful attack on the Doumer Bridge alone, however, would not hamper Chinese traffic moving through North Vietnam between Kwangsi and Yunnan or traffic moving between Yunnan and the port of Haiphong.

b. Priority Group B

(1) Railroad Bridges

Because North Vietnam would be more heavily dependent on imports of equipment and supplies after the industrial targets were neutralized, any physical break in the railroad lines leading to Communist China or to the port of Haiphong would materially affect the ability of the country to maintain its economy or to support large-scale military action. Railroad operations and traffic flow would be seriously hampered if access to Hanoi, the major rail center, were cut off or if the rail facilities in and around the city were damaged effectively.

In the first priority of targets for neutralization of the rail system is the 550-foot Dap Cau railroad/highway bridge (target 16) over the Song Cau. This bridge is located about 20 miles northeast of Hanoi on the Hanoi - Dong Dang railroad line, the main line connecting with the standard-gauge rail system of Communist China. Denial of this bridge would interrupt North Vietnamese import traffic moving from China to the Hanoi area and would halt Chinese traffic in transit through North Vietnam to or from Yunnan Province. The bridge is located 0.6 mile northeast of Dap Cau. Successful attack on the 1130-foot Hai Duong railroad/highway bridge (target 17) over the Thai Binh, about 37 miles east of Hanoi, would interrupt North Vietnamese import traffic moving from the port of Haiphong to Hanoi and also would greatly curtail Chinese transit traffic moving to or from Haiphong. The bridge is located 1.6 miles east of Hai Duong.

The 970-foot Viet Tri railroad/highway bridge (target 18) over the Claire, about 50 miles northwest of Hanoi, is another priority target in the system necessary to North Vietnamese import traffic moving from Yunnan Province, China, and its neutralization would reinforce the interdiction of Chinese transit traffic crossing North Vietnam. The bridge is located 0.9 mile east of Viet Tri. Important to the movement of military supplies from Hanoi to the south is the 575-foot Ninh Binh railroad/highway bridge (target 19) over the Song Day, about 71 miles south of Hanoi. The bridge is located just northeast of Ninh Binh. Finally, consideration should be given to the possibility of including the 738-foot railroad/highway bridge (target 20) over the Canal des Rapides, about 5.6 miles northeast of Hanoi and 1.4 miles southwest of Yen Vien, as a target, for it is the only bridge serving both the Hanoi - Dong Dang and the Haiphong - Lao Kay rail lines.

If the bridges discussed above were all neutralized, the North Vietnamese would be forced to depend on motor truck transport to move vital supplies. Because each of the bridges carries highway as well as rail traffic, successful attack, in each instance, would interdict a main highway route as well as a main rail line. In order to move supplies across the rivers at these locations, the North Vietnamese would be forced to use pontoon bridges of some sort or to set up ferry facilities. These bridges also are important to the telecommunications system of the country, for many of the cables cross rivers attached to the underside of bridges or are buried in the riverbed beneath them.

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The capability of the Hanoi - Dong Dang rail line is currently estimated to be at least 1,360 tons each way per day (EWPd). The highway from Dong Dang to Hanoi has a capability of about 635 tons per day as far as Bac Ninh and 4,350 tons from Bac Ninh to Hanoi. Denial of the bridge at Dap Cau (target 16), which is located a few miles north-east of Bac Ninh, thus could cut off the potential flow of about 2,000 tons per day from Dong Dang to Hanoi. If the North Vietnamese succeeded in moving this tonnage across the Song Cau by pontoon bridge or by ferry, the highway system would have the capability of moving this amount of tonnage toward Hanoi. Both the Canal des Rapides and the Red River, however, would be further obstacles on the route to Hanoi if targets 15 and 20 were destroyed.

The capability of the Hanoi-Haiphong rail line probably is about 1,900 tons EWPd, and the highway can carry about 3,265 tons per day. Denial of the bridge at Hai Duong (target 17) potentially would deprive Hanoi of more than 5,000 tons per day via this route. Even if supplies were ferried across the river, no more than some 3,200 tons could be moved on toward the city by highway, and even this movement would be hampered if target 15 were seriously affected. The highway from the port of Hong Gay could carry about 590 tons per day to Bac Ninh, but beyond Bac Ninh the destruction of targets 15 and 20 would restrict further movement into Hanoi.

The capability of the Hanoi - Lao Kay rail line also is estimated to be about 1,900 tons EWPd. Denial of the bridge at Viet Tri (target 18) would cut off this amount plus some 725 tons per day that might have moved by highway from Ha Giang northeast of Lao Kay near the Chinese border. On the Hanoi side of target 18 the highway could handle only some 1,270 tons per day, if supplies were moved across the river by other means. Targets 15 and 20 also would be encountered before Hanoi proper were reached by this route. About 270 tons per day could move by highway from Cao Bang northwest of Dong Dang near the Chinese border. Targets 15 and 20, however, would again be encountered before the convoys reached Hanoi. A small amount of about 270 tons per day could reach Hanoi by truck from Lao Kay by following a route via Yen Bay and Suyut, and another 180 tons could be moved from Ban Nam Cuong without encountering any of the targets discussed above. Other minor roads, trails, and ferries undoubtedly could be used, but only a small percentage of the current total of 11,000 tons potentially able to reach Hanoi by rail and highway actually would get through.

South of Hanoi the denial of the bridge at Ninh Binh (target 19) would cut off the potential daily flow of about 1,540 tons by rail to Ham Rong. The main highway from Hanoi to Ham Rong, which can carry 3,265 tons per day, would not be affected. The road from Haiphong, however, which can carry more than 800 tons per day, would be cut if target 19 were successfully attacked.

(2) Recuperation

Reconstruction of heavily damaged bridges would be a substantial undertaking for the North Vietnamese and probably could not be accomplished without extensive aid either from Communist China or the USSR. It also is questionable whether or not there are any sizable reserves of bridge building materials immediately available in the country for a task of this magnitude.

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Perhaps because of a lack of proper heavy construction equipment, the construction of bridges has progressed slowly in North Vietnam. The prime example of this slow progress is the lack of a bridge across the Song Ma at Ham Rong, which for years has prevented the reopening of the rail line further south toward the Demarcation Line.

(3) Petroleum Storage

The petroleum storage areas are included in Priority Group B along with the railroad/highway bridges because the loss of a major portion of the petroleum supplies currently in the country would effectively hamper motor transport and would prevent it from being a substantial substitute for rail transport. North Vietnam has no indigenous production of petroleum, as there are no known reserves of oil or natural gas in the country and the oil shale reserves have not been developed. Most of the petroleum products used in North Vietnam come from the USSR, arriving for the most part by ship at Haiphong, although an unknown amount arrives by rail through Communist China. The estimated bulk storage capacity for petroleum products in the country in 1959 was 45,000 tons. The tank farm (target 21) near the Shell Petroleum Pier, about 1.5 miles upstream from the main part of Haiphong port, is the chief petroleum products storage area, accounting for more than 60 percent of the total capacity, and also is the principal distribution center. The Hanoi petroleum products storage area (target 22) is considerably smaller but is included because it is located near target 25, which is a military depot. The loss of the two petroleum storage areas and of the considerable amount of storage located at airfields that also are included as targets would mean that for months, while more tanks were being imported and installed, petroleum products probably would have to be imported in barrels.

(4) Dock Areas as Targets

A small amount of economic and military supplies could reach North Vietnam on Free World and Sino-Soviet Bloc merchant ships, which currently make regular calls at North Vietnamese ports. The dock areas of the ports of Haiphong, Cam Pha, and Hon Gay were not selected as targets, however, because of the danger of damaging a Free World or a Bloc merchant ship loading or unloading cargo at the time of the bombing mission. In order to neutralize the port of Haiphong, it would appear to be more feasible to interdict the main transportation arteries leading from the port to the interior of the country. The ports of Cam Pha and Hon Gay are significant largely for the export of coal and are not used to any extent for the import of economic or military goods. Coal exports would be effectively halted if the Hon Gay Thermal Powerplant in Priority Group C of the industrial target list were successfully attacked in the bombing mission.

c. Priority Group C

Information on possible targets in Priority Group C is being included largely for reference purposes. Airfields and military storage areas have been selected for inclusion in this group because of their importance in the immediate supply of troops operating in Laos and South Vietnam. Although road transport in the forward areas is greatly hampered by the rainy season, the airlift takes advantage of weather breaks, and flight scheduling is maintained at a relatively high rate during the rainy season, which lasts from May to October.

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With bomb craters in runways, loss of aircraft on the ground, and destruction of aircraft fuel storage at the airfields, the airlift capability would be interrupted at least until the airstrips could be repaired and aircraft could be flown to North Vietnam from other Sino-Soviet Bloc countries. Serious damage to the present extensive military storage areas also would have immediate as well as long-run effects, depending on how soon they could be restocked by rail and water transport in the Hanoi-Haiphong area and by road in the forward areas. The large number of storage areas in North Vietnam and the extensive area of each one indicate that North Vietnam is the location of a large military buildup for a Communist push in Southeast Asia.

The selection of the six military depots in Priority Group C from the many that are known to exist in North Vietnam was based somewhat arbitrarily on distribution throughout the country and proximity to other targets, such as a railroad bridge or the Thai Nguyen Iron and Steel Plant, rather than from knowledge as to the size of the depot or the types of supplies contained in the individual depots. The list could be refined, and specific buildings could be picked within each depot, when more information becomes available regarding the contents of the depots. Loss of supplies in Priority Group C target areas would make inroads into the capability of the logistics system to support military as well as economic activity.

The Hanoi/Gia Lam Airfield (target 23a) is given top priority in Group C because it is by far the airfield most used by Soviet and DRV planes taking part in the airlift and because it has the only facilities, although limited, for maintenance and repair of aircraft in North Vietnam. It also is the Headquarters and the central control point for air defense and contains the radio transmitter for air defense direction and control.

Although the Hanoi/Bac Mai Airfield (target 23b) is considerably smaller and less frequently used at present, it also is included because it could be used as a substitute for the Gia Lam Airfield as a base for airlift operations. The Bac Mai Airfield is capable of supporting the aircraft now being used in the airlift.

The Haiphong/Cat Bi Airfield (target 24a) is the only airfield in North Vietnam that can support jet or turboprop transports in a sustained operation and is used frequently by the USSR An-12 transports that airlift supplies directly from the USSR to North Vietnam. The Haiphong/Kien An Airfield (target 24b) is included for the same reason that the second airfield in Hanoi is included. Although this airfield could not support jet or turboprop aircraft, it could be used as the center of the airlift operations, for it is located close to fuel storage and military supply depots.

Dong Hoi Airfield (target 27) and Vinh Airfield (target 28) have about equal priority. Dong Hoi Airfield, which has a 5,900-foot runway with a hard surface, is used regularly in the airlift and is the southernmost airport in North Vietnam. Although Vinh has a poorer runway, it often has more traffic, with a number of Soviet aircraft based there at times.

Dien Bien Phu Airfield (target 31), together with its storage facilities, has been included in the priority list not only because the airfield is used often in the airlift but also because the area is perhaps the most important forward staging area in North Vietnam for operations in northern Laos.

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The Hanoi Army Supply Depot at North Tay Ho (target 25a) is one of the largest of the depots located in the Hanoi area and would be easy to locate, as it extends for some distance along the Red River. The Hanoi Army Supply Depot located at Canal des Rapides (target 25b), although smaller, may contain more heavy armaments, as it is located along the main rail line from P'ing-hsiang in Communist China. The Co Bi depot (target 25c), which has more storage buildings than the Canal des Rapides depot, is located about 1 mile from the Hanoi/Gia Lam Airfield (target 23a), thus making it a likely important source for air-lift supplies. The fourth depot included on the priority list for the Hanoi area, the Hanoi Army Supply Depot North-Northeast (target 25d), was chosen from among the various other depots in the area because of its location adjacent to the Hanoi petroleum products storage area (target 22). Haiphong Ammunition Depot (target 26) is an important target not only because it is large and because its loss would have considerable psychological impact but also because it is located near target 24b. The Phu Van Ammunition Depot (target 29a) and the Phu Van Army Supply Depot (target 29b) have been included for their importance as part of the Vinh forward staging area, sometimes referred to as the Ca River military complex. The Thai Nguyen Army Supply Depot (targets 30a-d) is one of the most extensive depots in North Vietnam and is located near the iron and steel plant (target 2).

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C. The Special Case of Radio Hanoi

The broadcasting system of North Vietnam has shown itself to be an effective and important medium of mass communications in recent years, although it operates from a relatively small transmission base. The system is controlled by Radio Hanoi (frequently referred to as the "Voice of Vietnam") and provides domestic coverage to about 300,000 radio receivers; some international amplitude-modulation (AM) radiobroadcasting coverage, largely to South Vietnam, Laos, and Cambodia; and limited domestic wire diffusion services.

Transmission facilities of Radio Hanoi are located at Me Tri,* 12 miles southwest of Hanoi. Besides providing domestic and international services, these facilities also are used for clandestine broadcasting purposes. With Laos as their main target, two shortwave transmitters carry three clandestine programs, known as "Radio Pathet Lao," "the Voice of the Laotian Kingdom," and "the National Army Broadcasting Station." The main point-to-point radio transmitting facilities for the North Vietnamese Army, which are used extensively for military communications within North Vietnam and with units operating in Laos, are also located at Me Tri, including facilities at Dai Mo.

There are a number of reasons why the use of the transmission facilities at Me Tri as an air target would be desirable. Serious damage to these facilities would deny the central government the use of this unique one-way communications medium for informing the masses of the emergency situation. Timing would be important in an attack on this target. The psychological impact of the destruction of this target could be enhanced if the attack were timed to follow an announcement by Radio Hanoi that hostile airplanes were attacking North Vietnam. Concern and uncertainty among the civilian population stemming from the lack of instruction and knowledge of the true situation would then make the psychological impact of the elimination of Radio Hanoi more dramatic.

The central government also would be denied the use of this one-way medium as an alternate medium of communications for the operation of the nationwide command-control structure to cope with the emergency situation. The military establishment would be denied the main radio transmitting facilities of the military point-to-point radio network. High-power international broadcasting and the clandestine services also would cease until substitute facilities could be placed in operation.

The argument against the use of the transmission facilities at Me Tri as an air target also is impressive. Elimination of Radio Hanoi would deny SEATO and the US an important source of information on conditions in North Vietnam and of knowledge concerning the propaganda line being followed by North Vietnam following the air attack. The destruction of the transmitting facilities for Radio Vietnam also could be used by the Sino-Soviet Bloc as a propaganda line stating that SEATO or US forces had denied the world an important source of information on the truth on conditions in North Vietnam and on policies toward Laos and Southeast Asia in general. Possibly the most compelling argument against the use of Me Tri as a target would be the ability of North Vietnam to compensate for the loss of these transmitting facilities, at least for certain priority purposes.

* Main site of the communications complex in the Ha Dong - Dai Mo area.

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The nationwide effectiveness of the telecommunications structure, especially in emergencies requiring quick action, depends largely on the operational availability of all, or at least a substantial portion, of the separate civil and military open wireline and fixed point-to-point radio networks. For the most part the route of the military wireline network follows that of the civil wireline network, so that joint use is made of wireline poles, although central facilities are separate. Points of communications of the military and civil point-to-point radio network are similar, but the radio transmitting facilities of each are for the most part located at separate sites. Denial of the transmitting facilities at Me Tri, therefore, would not effectively impair the command-control communications structure, nor would the serious damage of the electric powerplants mentioned above as targets eliminate the power source for telecommunications, because some standby facilities are available.

To impair effectively the command-control and information communications structure would require attention to a separate, specialized system of targets within the telecommunications industry. This system would be comprised of a relatively large number of targets, many of which would be difficult to identify and hard to destroy without considerable accompanying casualties among the civilian population. Elimination of the facilities at Me Tri, therefore, would only temporarily impair the command and information communications system in North Vietnam. It should be noted, however, that a heavy attack on Hanoi/Gia Lam Airfield could destroy Air Defense Headquarters and the associated radio transmitting facilities and that the destruction of the railroad/highway bridges, discussed earlier, probably will result in severing civil and military wireline communications at these locations.

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D. Population Considerations

The segments of the population that possibly would be affected by action against all these targets include some of the rural population living close to selected targets, some city dwellers living interspersed within areas primarily devoted to industry or storage, regular workers at plants and other facilities affected, members of parttime labor formations living and working in group housing under semimilitary discipline, military personnel on duty or actually living on the premises of some targets, and people crossing bridges.

Of the targets under Priority Group A, numbers 3 and 15 (Haiphong Cement Plant and Doumer Bridge) probably will provide the least number of civilian casualties. The risk of incurring a large number of worker casualties probably is greatest for target 1 (Hanoi Machine Tool Plant), a strategic industrial facility that apparently is now in full operation with many trainees also on hand. This risk also is possible for target 2, where much construction is in progress. Ideally, casualties at target 4 (Viet Tri Chemical Plant) should be small and limited to plant personnel.

Of the targets under Priority Group B, none, by their nature, are labor intensive. The greatest likelihood of casualties is at target 5 (Hanoi Thermal Powerplant), located amid built-up surroundings, and at target 8 (Viet Tri Thermal Powerplant) and target 10 (Uong Bi), for much plant construction and operation is going on in the immediate vicinity of these two targets.

Targets under Priority Group C offer on the industrial side little risk of many casualties except for target 13 (Nam Dinh Thermal Powerplant) where near misses might hit the textile plant or might fall in the town itself. On the logistics side, Priority Group C targets conceivably could produce a large number of military casualties, depending on the number of troops living and operating in small detachments within the limits of the storage targets selected. Casualties at airfields would be slight.

In summary, effects on city-dwellers would not be great, if targets 5 and 13 were accurately attacked and if few hits were made inadvertently on dormitory types of housing at targets 2, 4, 10, 14, and 30a. Effects on the rural population would not be great, although some villages may be found within a few hundred yards of some targets, especially around targets 1, 2, 16, 19, and 23 through 31. The high density of the distribution of the rural population is partly compensated for by the fact that the farming population lives in close-packed villages, with fields and paddies in between. The ramifications of mutual sympathy between the populations of North and South Vietnam also should be noted, especially with regard to the segment of the population that is Roman Catholic. The negative psychological impact of unnecessarily numerous civilian casualties could be perceptible in South Vietnam.

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II. List of Selected Targets

Target No.: 1 Priority A; Industrial

Name: Hanoi Machine Tool Plant

25X1A

Location: 21-00-02N
105-49-07E

Reason for Selection: New plant; loss would constitute blow to Communist pride because plant is a key Soviet aid project; also most important indigenous production and repair facility for light machinery.

Surroundings: Extensive worker housing area across road from principal installation; located in suburban semi-agricultural area of high density, with village adjacent to main compound.

Possible Negative Results: Depend on amount of physical damage; on-job worker casualties potentially numerous because work force reportedly totals 2,500; other casualties possible.

Nearby Targets of Opportunity: Bac Mai Airfield (target 23b) on the east; telecommunications facilities in a broad area on the west.

Graphics: Figures 1, 2, 6a.

* Number given in

25X1A

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Target No.: 2 Priority A; Industrial

Name: Thai Nguyen Iron and Steel Plant

25X1A

Location: 21-33-30N
105-52-20E

Reason for Selection: Under construction; loss would constitute blow to Communist pride because plant is the most ambitious and costly Chinese aid project; area scheduled to become the primary heavy industrial center of North Vietnam.

Surroundings: Immediate construction area extensive, with little village settlement remaining in the immediately surrounding area; large number of temporary buildings nearby may include worker dormitories.

Possible Negative Results: Depends on amount of physical damage; serious delays in construction could be caused; damaged construction equipment would be difficult to replace. Construction force in general area probably remains large, but casualties likely to be few in immediate vicinity of completed construction.

Nearby Targets of Opportunity: Railway terminal and three railway bridges nearby; storage facilities of target 30; further study of area needed.

Graphics: Figures 1, 5-a.

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Target No.: 3. Priority A; Industrial

Name: Haiphong Cement Plant

25X1A [REDACTED]
(see target 6)

Location: 20-51-50N
106-40-25E

Reason for
Selection: Only significant cement producer in North Vietnam;
supplies virtually all cement for construction
activity in country, and has important export
capability; rehabilitation of original French-
installed facilities completed with Soviet,
Chinese, and Rumanian aid.

Surroundings: On south bank of Cua Cam River; small number of
dwellings in immediate vicinity.

Possible Negative
Results: Casualties probably limited to employees.

Nearby Targets
of Opportunity: Petroleum storage area (target 21-a) nearby.
Port facilities, shipyards, one railway and two
highway bridges, and Haiphong railway terminal
facilities not recommended as targets because of
risk to foreign interests and nearby settlement.

Graphics: Figures 1, 3, 5-c, and 6-b.

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Target No.: 4 Priority A; Industrial

Name: Viet Tri Chemical Plant

25X1A

Location: 21-17-42N
105-25-30E

Reason for
Selection: New plant; loss would constitute blow to Communist
pride because plant is important Chinese aid project;
scheduled to become center of industrial chemical
industry.

Surroundings: Compound located between railroad and north bank
of Red River, with two villages nearby.

Possible Negative
Results: Casualties might include construction workers
as well as plant employees.

Nearby Targets
of Opportunity: Besides targets 8 and 18, other nearby target
possibilities include associated rail facilities,
and a small petroleum products storage area between
the park and the railroad/highway bridge.

Graphics: Figures 1, 5-k, 6-c.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 5 Priority B; Industrial

Name: Hanoi Thermal Power Plant

25X1A

Location: 21-02-35N
105-50-51E

Reason for Selection: Largest operating power plant (22,500 kw capacity), constituting almost 20 percent of total installed electric power capacity in the country. Chief supplier of Hanoi-Haiphong grid which is in the process of being expanded to include the power plant at Uong Bi (target 10), having already been connected to those at Viet Tri (target 8) and Thai Nguyen (target 9).

Surroundings: Main target area is roughly 550' long by 250' to 300' wide, with a 350'-long extension consisting of related buildings; plant surrounded by city streets, along which normally dense city settlement exists.

Possible Negative Results: Damage would pose problems in replacement because of French origin of equipment; location within a built-up area makes casualties likely from misses.

Nearby Targets of Opportunity: City waterworks across the street on the north side.

Graphics: Figures 1, 2, 5-b, 6-d.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 6 Priority B; Industrial
Name: Haiphong Thermal Power Plant at Haiphong Cement Plant

25X1A

Location: 20-51-50N
106-40-25E

Reason for Selection: One of the four largest operating power plants (12,000 kw. estimated capacity); serves cement plant and city.

Surroundings: Surrounded by other plant facilities. See notes on target 3.

Possible Negative Results: Even brief interruption of service may result in serious damage, particularly to cement plant kilns, and cause shutdown; casualties probably limited to employees.

Nearby Targets of Opportunity: See target 3.

Graphics: Figures 1, 3, 5-c, 6-b.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 7 Priority B; Industrial

Name: Haiphong Thermal Power Plant

25X1A



Location: 20-52-15N
106-42-50E

Reason for Selection: Locally essential for industrial and stand-by power, especially for cement plant, contributing 6,000 kw. capacity.

Surroundings: On south bank of Cua Cam River in waterfront industrial and storage area.

Possible Negative Results: Depends upon degree of priority need for assumed stand-by capacity; French origin of equipment makes repair and replacement expensive; casualties probably limited to employees.

Nearby Targets of Opportunity: Consumer-goods factories probably located nearby.

Graphics: Figures 1, 3, 5-d, 6-e.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 8 Priority B; Industrial

Name: Viet Tri Thermal Power Plant

25X1A [REDACTED]
(see target 4)

Location: 21-17-42N
105-25-30E

Reason for
Selection: New plant serving rising industrial complex; already
joined to grid; full 16,000 kw. capacity reportedly
now available, constitutes 23 percent of grid ca-
pacity; plant capacity to be expanded to 24 000 kw.

Surroundings: Inside compound of Viet Tri Chemical Plant (target 4).

Possible Negative
Results: Casualties probably limited to employees, but might
include construction workers in vicinity.

Nearby Targets
of Opportunity: See target 4.

Graphics: Figures 1, 5-k, 6-f.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 9 Priority B; Industrial

Name: Thai Nguyen Thermal Power Plant

25X1A

[REDACTED]
(see target 2)

Location: 21-36-35N
105-49-15E

Reason for
Selection: New plant, just completed; will serve iron and steel
plant under construction; already connected to grid;
plant is the key facility of target 2.

Surroundings: Within extensive construction area; few casualties
likely.

Possible Negative
Results: See target 8.

Nearby Targets
of Opportunity: See target 2.

Graphics: Figures 1, 5-a.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 10 Priority B; Industrial

Name: Uong Bi Thermal Power Plant

25X1A

Location: 21-02-00N
106-47-25E

Reason for Selection: New 48,000 kw. plant under construction; to serve local coal mining and loading facilities and the Haiphong-Hanoi grid. First section of 24,000 kw. scheduled to be completed in 1962; if not damaged seriously, completion might be rushed to replace losses from damage to targets 5, 6, and 7, which contain older equipment that is more difficult to repair.

Surroundings: Probably located outside town of Uong Bi and probably surrounded by discontinuous village-type settlement; exact distance from Uong Bi not known.

Possible Negative Results: Construction force, but probably not the inhabitants of nearby villages, may suffer casualties.

Nearby Targets of Opportunity: Local rail line passing power plant connects Port Redon shipping facilities with Vang Danh coal mines north of Uong Bi; loss of old 1,000 kw. capacity plant nearby would inconvenience coal mining in the vicinity.

Graphics: Figure 1

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 11 Priority C; Industrial

Name: Hon Gay Thermal Power Plant

25X1A

Location: 20-56-28N
107-06-50E

Reason for Selection: Serves the Hon Gay and Cam Pha coal mining areas, which in turn provide coal for other power plants and for export. Loss thus would disturb operation of other power plants and have some effects on foreign trade. Capacity 13,000 kw.

Surroundings: Little housing or agriculture in immediate vicinity; coal mining and shipping is the main local industry.

Possible Negative Results: Damage interrupting plant service will hamper mining and ship-loading. Casualties probably limited to regular work force.

Nearby Targets of Opportunity: Traveling cranes on Hon Gay docks acceptable providing no foreign ships are alongside; local railway yards and repair facilities serving Hon Gay--Cam Pha coal-mining area.

Graphics: Figures 1, 5-e.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 12 Priority C; Industrial

Name: Ben Thuy [Vinh] Thermal Power Plant

25X1A

Location: 18-38-45N
105-42-26E

Reason for Selection: New plant serving Vinh area; reported capacity 8,000 kw.; selected as best target in Vinh area.

Surroundings: Located in area of logistic storage and transshipment activities; dormitories possibly located nearby.

Possible Negative Results: Minor damage causing plant shutdown probably would have more affect on industry in Vinh than on nearby logistical activities; high casualty rate unlikely, barring hits on dormitories or barracks.

Nearby Targets of Opportunity: Simple long-shore unloading facilities and adjacent storage area acceptable targets, also small petroleum storage area a short distance down river on same side (north).

Graphics: Figures 1, 5-f.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 13 Priority C; Industrial

Name: Nam Dinh Thermal Power Plant

25X1A

Location: 20-25-//N
106-10-//E

Reason for Selection: Outside main grid, but selected because it is main power source for Nam Dinh Textile Mill located in the country's third largest city; enlarged (1957) to 7,500 kw. capacity.

Surroundings: Located within Nam Dinh Textile Plant confines, with factory buildings on 2 sides, warehouses or repair shops on the third, and municipal administrative buildings on fourth.

Possible Negative Results: Would include full or partial shutdown of textile plant; hits on textile plant itself would cause numerous casualties.

Nearby Targets of Opportunity: None are known.

Graphics: Figure 1

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 14 Priority C; Industrial

Name: Hanoi/Gia Lam Railroad Repair Shops

25X1A

Location: 21-02-57N
105-53-10E

Reason for
Selection: As primary repair facility, includes repair shops,
foundry, electric shop, machine shop, casting and
welding shops, and warehouses.

Surroundings: Adjacent to railroad and near Doumer Bridge
(target 15) and Gia Lam Airfield (target 23);
two villages nearby, but closest dwellings in
target area are workers' dormitories south of
shops.

Possible Negative
Results: Casualties to normal work force to be anticipated;
damage would affect long-range recuperability of
the rail system following attacks on key bridges.

Nearby Targets
of Opportunity: Other targets in Gia Lam area.

Graphics: Figures 1, 2, 5-g.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 15 Priority A; Logistic

Name: Hanoi Railroad/Highway Bridge over Red River
(Doumer Bridge)

25X1A

Location: 21-02-25N
105-51-57E

Reason for
Selection: Marked psychological reaction possible because this
is North Vietnam's longest bridge (5,520'X48'). Loss
would isolate Hanoi temporarily from north and east
and would disrupt wireline facilities on the bridge.

Surroundings: Urban area on south bank built up but north bank
more open; length of bridge precludes high degree
of risk to surrounding population.

Possible Negative
Results: Large number of casualties possible on bridge
of this length, especially if traffic includes
trains or truck convoys; during French times,
traffic tieups not uncommon.

Nearby Targets
of Opportunity: Most potential targets on south bank of river,
such as Hanoi port storage facilities, unacceptable
because of risk to population.

Graphics: Figures 1, 2, 5-h, 6-g.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 16 Priority B; Logistic

Name: Dap Cau Railroad/Highway Bridge over Song Cau.

25X1A

Location: 21-12-18N
106-05-46E

Reason for
Selection: Loss of this 550'X25' bridge would terminate rail traffic between Dong Dang at the China border and all major terminals in North Vietnam and halt highway traffic temporarily; would terminate all China-to-China traffic and disrupt wireline facilities on the bridge.

Surroundings: Scattered village-type settlement on both banks, but population density not great.

Possible Negative
Results: Few casualties likely; recuperability proportional to damage.

Nearby Targets
of Opportunity: None in immediate vicinity; substitute bridge target, in association with a locomotive shed on the north bank, located 7.5 miles to the north at Phu Lang Thuong.

Graphics: Figures 1, 5-1.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 17 Priority B; Logistic

Name: Hai Duong Railroad/Highway Bridge over Thai Binh

25X1A

Location: 20-56-30N
106-21-32E

Reason for
Selection: Loss of this 1,130'X20' bridge would terminate
rail traffic between Haiphong and other points in
North Vietnam and hamper highway traffic; also
would disrupt wireline facilities on the bridge.

Surroundings: In open rural area.

Possible Negative
Results: Few casualties likely unless train or convoy is
crossing.

Nearby Targets
of Opportunity: None in immediate vicinity; substitute bridge
target located about 3 miles to the northeast.

Graphics: Figures 1, 5-j, 6-h.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 18 Priority B; Logistic

Name: Viet Tri Railroad/Highway Bridge

25X1A

Location: 21-17-54N
105-26-57E

Reason for
Selection: Loss of this 970'X17' bridge would virtually
terminate all rail traffic to and from points
between Viet Tri and Lao Kay, would terminate
all China-to-China traffic, and would hamper
highway traffic; would disrupt wireline
facilities on the bridge.

Surroundings: Riverside rural settlement on both banks of
river, but vicinity of approaches appears to
be clear.

Possible Negative
Results: See target 17.

Nearby Targets
of Opportunity: See target 4.

Graphics: Figures 1, 5-k, 6-1.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 19 Priority B; Logistic

Name: Ninh Binh Railroad/Highway Bridge over Song Day

25X1A

Location: 20-15-37N
105-59-11E

Reason for Selection: Loss of this 575'x24' bridge would terminate all rail traffic on southern half of Hanoi-Ham Rong railroad, and would hamper highway traffic (requiring all military supplies moving southward from Hanoi area by rail to be transferred to highways at this point), and would disrupt wireline facilities on the bridge.

Surroundings: Located on north side of small town, with riverside settlement on north side of bridge.

Possible Negative Results: Moderate damage would not be as critical to transport systems here as elsewhere; some casualties likely because of relative density of population on both banks.

Nearby Targets of Opportunity: None are known.

Graphics: Figures 1, 5-1, 6-j.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 20 Priority B; Logistic

Name: Hanoi RR/HY Bridge over Canal des Rapides

25X1A

Location: 21-04-32N
105-54-58E

Reason for Selection: Loss of this 738'x20' bridge alone would break the rail system into two parts; would sharply reduce traffic from Hanoi and Haiphong on the south to China, all other points along the Lao Kay and Dong Dang rail lines, and the Thai Nguyen area on the north; loss of bridge would not disturb China-to-China traffic nor Haiphong-Hanoi-Ham Rong traffic. In conjunction with loss of other bridges, would virtually isolate the Gia Lam section of Hanoi from the Thai Nguyen and Viet Tri regions, and disrupt wireline facilities on the bridge.

Surroundings: Some village-type settlement near the bridge, but not in critical proximity.

Possible Negative Results: Consequences proportional to damage; few casualties likely.

Nearby Targets of Opportunity: Ai Mo railroad yards and a conspicuous factory or storage area north of the bridge.

Graphics: Figures 1, 2, 5-m.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 21 Priority B; Logistic
Name: Haiphong Petroleum-Products Storage Area, Thuong Ly

25X1A

Location: 20-52-25N
106-40-05E

Reason for
Selection: North Vietnam's primary petroleum storage facility;
loss would eliminate 62 percent of country's esti-
mated total storage capacity (1959). Without fuel,
motor transport and stand-by electrical power would
suffer.

Surroundings: Relatively isolated storage area on south bank of
river.

Possible Negative
Results: See target 20.

Nearby Targets
of Opportunity: None in immediate vicinity except a small rail yard
not noted under target 3.

Graphics: Figures 1, 3, 5-n.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 22 Priority B; Logistic

Name: Hanoi Petroleum-Products Storage Area, Thanh Am

25X1A

Location 21-03-57N
105-53-48E

Reason for
Selection: Destruction of Hanoi's most important such
facility located adjacent to target 25d.

Surroundings: Villages nearby, and military camp on opposite
side of adjacent military storage area. (target 25d).

Possible Negative
Results: See target 20.

Nearby Targets
of Opportunity: None, other than as listed above, or under
target 20.

Graphics: Figures 1, 2, 5-o

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 23a Priority C; Logistic

Name: Hanoi/Gia Lam Airfield

25X1A

Location: 21-02-10N
105-53-27E

Reason for Selection: Most frequently used airfield, especially in current airlift, petroleum products and possibly ammunition storage; other facilities include Air Defense Headquarters and associated transmitters; their destruction would leave military with no effective air defense reporting and control capability. Concrete surface.

Surroundings: Nearby villages apparently not in critical proximity.

Possible Negative Results: Moderate damage readily repaired, except that incurred by locally irreplaceable communications, repair, control, or storage facilities; few casualties likely.

Nearby Targets of Opportunity: See target 22.

Graphics: Figures 1, 2, 5-p.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 23b Priority C; Logistic

Name: Hanoi/Bac Mai Airfield

25X1A

Location: 20-59-30N
105-50-06E

Reason for Selection: Hanoi's second airfield, with significant all-weather capability; not in regular use; has petroleum and ammunition storage and other facilities; target 1 nearby; also other military and storage areas not selected for consideration here. Concrete surface.

Surroundings: See target 23a.

Possible Negative Results: See target 23a.

Nearby Targets of Opportunity: Other military, storage, communications, and industrial targets within a few miles to east and west of it.

Graphics: Figures 1, 2, 5-q.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 24a Priority C; Logistic

Name: Haiphong/Cat Bi Airfield

25X1A

Location: 20-48-50N
106-44-00E

Reason for Selection: One of the country's best airfields in terms of all-weather capability; has petroleum and ammunition storage; other installations; about 8,000-foot runway with concrete surface. Supports jet and turboprop transport aircraft.

Surroundings: Semi-agricultural densely populated suburban area with some villages nearby.

Possible Negative Results: See target 23a.

Nearby Targets of Opportunity: Target 26 is probably most important, but at least one other storage area is located in the vicinity of Kien An.

Graphics: Figures 1, 4, 5-r.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 24b Priority C; Logistic

Name: Haiphong/Kien An Airfield

25X1A

Location: 20-48-30N
106-37-25E

Reason for
Selection: Important airfield, with apparently 3 times the
petroleum storage capacity of Hanoi/Bac Mai or
Haiphong/Cat Bi, plus much ammunition storage
nearby (target 26). Supports piston-type trans-
port aircraft.

Surroundings: See target 24a.

Possible Negative
Results: See target 23a.

Nearby Targets
of Opportunity: See target 24a.

Graphics: Figures 1, 4, 5-s.

S-E-C-R-E-T

S-E-C-R-E-T

25X1A

Target No.: 25 a through d Priority C; Logistic

Name: Hanoi Army Supply Depots
[REDACTED] (general number apparently covering
supply depots in Hanoi area)

Location: See individual targets.

Reason for
Selection: Although the Hanoi depots here selected are obviously important, their net importance cannot yet be assessed definitively; those selected are located in vicinity of other targets northeast of the city.

Surroundings: See target 23a for all except target 25a, which is located on the south bank of the Red River, somewhat detached from the rest of Hanoi but adjacent to barracks-style housing on the north; target 25a possibly contains some barracks or other housing within its present confines.

Possible Negative
Results: Results of partial success a matter of luck, depending upon contents of buildings destroyed; military casualties probable and civilian casualties possible, especially at 25a.

Nearby Targets
of Opportunity: See Figure 2 for other nearby targets; no additional targets on south bank of Red River (such as port storage area) known to be fully acceptable.

Graphics: Figures 1, 2, 5-t, 5-u, 5-v, 5-w.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 25a Priority C; Logistic

Name Hanoi Army Supply Depot, North Tay Ho

25X1A

Location: 21-03-08N
105-50-50E

Reason for
Selection: Appears to be a major storage area, located on the
south side of the Red River above the Doumer Bridge
(target 15); includes 224 large and 35 small storage
buildings.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 25b Priority C; Logistic

Name: Hanoi Army Supply Depot, Canal des Rapides

25X1A

Location: 21-04-10N
105-54-44E

Reason for
Selection: Compact group of 51 storage buildings (5 large)
adjacent to the railroad and near the Canal des
Rapides Bridge (target 20); may house relatively
heavy and valuable stored materiel.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 25c Priority C; Logistic

Name: Hanoi Army Supply Depot, Co B1

25X1A

Location: 21-01-58N
105-54-52E

Reason for
Selection: Somewhat dispersed group of 73 storage buildings
about 1 mile from airfield (target 23a) and along
railroad.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 25d Priority C; Logistic

Name: Hanoi Army Supply Depot, North-Northeast

25X1A

Location: 21-03-50N
105-53-24E

Reason for
Selection: Attractive as target because adjacent to target 22
(Hanoi petroleum-products storage); has 82 storage
buildings (33 large); proximity to military camp
suggests storage is of conventional military
character.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 26 Priority C; Logistic

Name: Haiphong Ammunition Depot, Kien An, Southwest

25X1A

Location: 20-48-35N
106-38-25E

Reason for
Selection: Main Haiphong ammunition storage area; roughly
3,000 feet x 5,000 feet in size, with 43 revetted
buildings and possible underground storage; adjacent
to Kien An Airfield (target 24b).

Surroundings: See target 23a.

Possible Negative
Results: See target 20. Revetted buildings increase
difficulty of successful attack.

Nearby Targets
of Opportunity: At least one other storage area known in the
vicinity of Kien An.

Graphics: Figures 1, 4, 5-x.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 27 Priority C; Logistic

Name: Dong Hoi Airfield

25X1A

Location: 17-29-38N
106-37-24E

Reason for
Selection: One of two key airfields in southern North Vietnam
for logistic support to operations against South
Vietnam and Laos; well equipped and maintained;
supports MIG aircraft but not on sustained basis;
hard-surfaced runway 5,900 feet long.

Surroundings: See target 23.

Possible Negative
Results: See target 23; qualification required because of
smaller size.

Nearby Targets
of Opportunity: Storage areas probably nearby.

Graphics: Figures 1, 5-y.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 28 Priority C; Logistic

Name: Vinh Airfield

25X1A

Location: 18-43-48N
105-40-29E

Reason for
Selection: Second key airfield in south for logistic support
of current operations. Less well-equipped than
Dong Hoi (target 27), but favorably situated for
extension and expansion of facilities; laterite-
surfaced runway 4,200 feet long.

Surroundings: See target 23.

Possible Negative
Results: Moderate damage readily repaired.

Nearby Targets
of Opportunity: See targets 12 and 29.

Graphics: Figures 1, 5-z.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 29 a and b Priority C; Logistic

Name: Elements of Ca River Military Complex:
(a) Phu Van Ammunition Depot East
(b) Phu Van Army Supply Depot Northwest

25X1A

Location: (a) 18-50-06N
105-18-51E

(b) 18-50-47N
105-18-05E

Reason for Selection: These two depots are part -- perhaps the more important part -- of the supply and storage facilities of the military complex located in this area, sometimes called the Ca River Military Complex; complex probably provides logistic support for movement westward into Laos along Route 7, includes 31 revetted storage buildings with total of 37,000 square feet storage space in target 29a and 16 storage buildings with 63,000 square feet storage space in 29b.

Surroundings: Apparently located in densely populated rural area, but nearby villages apparently not in critical proximity.

Possible Negative Results: Consequences of partial success a matter of luck; immediate results will be to hamper temporarily offensive activities against Laos and South Vietnam; few casualties likely, other than military.

Nearby Targets of Opportunity: Ca River Military Complex probably includes other acceptable targets.

Graphics: Figures 1, 5-aa, 5-bb.

S-E-C-R-E-T

S-E-C-R-E-T

25X1A

Target No.:	30a through d	Priority C; Logistic
Name:	Thai Nguyen Army Supply Depots	
	[REDACTED] apparently covering supply depots in Thai Nguyen area)	
Location:	See individual targets.	
Reason for Selection:	The Thai Nguyen area may contain a considerable number of other storage areas; those selected probably most important. Because of coal and iron-ore mining and large amount of construction activity in the area, the actual ground situation may be more complex than can be indicated here.	
Surroundings:	Targets 30-a and 30-b probably near villages but greater isolation probable for targets 30-c and 30-d.	
Possible Negative Results:	Consequences of partial success a matter of luck; would serve to reduce stockpiles at this important rear storage area; numerous nonmilitary casualties unlikely.	
Nearby Targets of Opportunity:	See target 2; other acceptable military storage may exist.	
Graphics:	Figures 1, 5-cc, 5-dd.	

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 30a Priority C; Logistic

Name: Thai Nguyen Army Supply Depot
North Supply Depot

25X1A

Location: 21-38-15N
105-51-10E

Reason for
Selection: Relatively isolated depot resembling target
25b, contains 37 buildings, with 466,000 square
feet of storage space.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 30b Priority C; Logistic

Name: Thai Nguyen Army Supply Depot
Explosives Storage

25X1A

Location: 21-33-38N
105-51-32E

Reason for
Selection: Storage facility containing 15 large revetted
buildings and 30 support buildings; located near
the railroad junction serving the new iron and
steel complex (target 2), and its iron-ore mine
beyond. Storage function may be related to
construction activity despite current target
classification as military.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 30c Priority C; Logistic

Name: Thai Nguyen Army Supply Depot
Supply Depot East

25X1A

Location: 21-35-14N
105-57-25E

Reason for
Selection: Contains 102 storage and support buildings.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 30d Priority C; Logistic

Name: Thai Nguyen Army Supply Depot
Supply Depot West

25X1A

Location: 21-36-50N
105-47-50E

Reason for
Selection: Contains 45 storage-type buildings.

S-E-C-R-E-T

S-E-C-R-E-T

Target No.: 31 Priority C; Logistic

Name: Dien Bien Phu Airfield

25X1A

Location: 21-24-10N
103-00-50E

Reason for Selection: One of two best airfields near the Laos border in western North Vietnam; new facilities; concrete and asphalt surface; attack would represent significantly deep penetration of country's airspace.

Surroundings: Part of elongated military complex; nearby villages not in apparently critical proximity.

Possible Negative Results: See target 23, balanced somewhat by psychological effect of depth of penetration itself.

Nearby Targets of Opportunity: Other parts of local military complex; Na San Airfield (21-13-12N; 104-01-57E), 65 miles to the east, is possible alternative selection.

Graphics: Figures 1, 5-ee.

S-E-C-R-E-T

VIETNAM TONKING HANOI 21 02 N 105 51 E
PROBABLY HANOI MACHINE TOOL PLANT. 13 JANUARY 1958.

25X1A

CONFIDENTIAL/NOFORN/CONTINUED CONTROL

CIA 327692



6-a. Hanoi Machine Tool Plant (target 1)

GROUP 1
Excluded from automatic
downgrading and
declassification

84



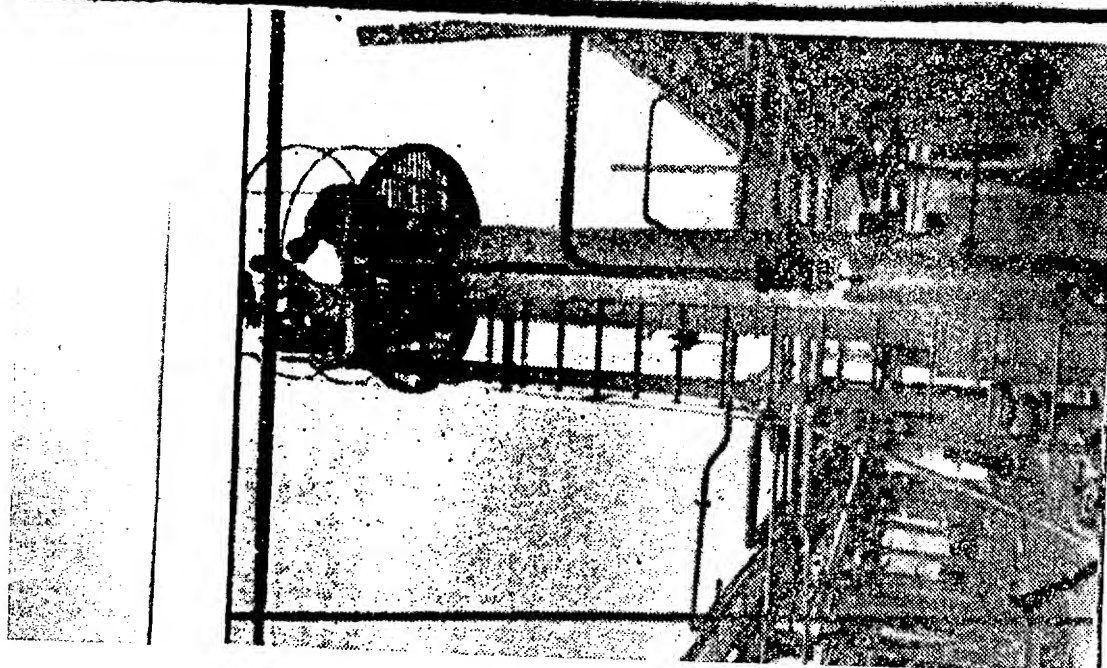
6-b. Haiphong Cement Plant (target 3)

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VIETNAM TONKING VIET TRI 21 18 N 105 26 E
CHEMICAL PLANT. AMMONIA WASHING TOWER. NHAN DAN, 18 APRIL 1961.
OFFICIAL USE ONLY (15)

CIA 496671



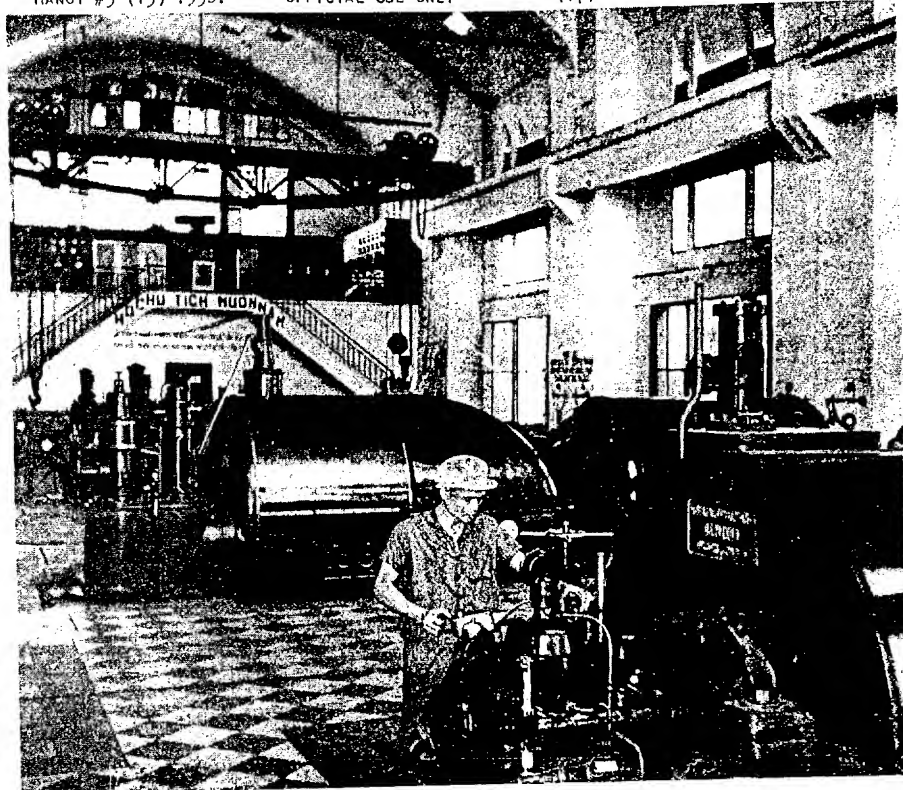
6-c. Viet Tri Chemical Plant (target 4)

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VIETNAM TONKING HANOI 21 02 N 105 51 E
YEN PHU ENGINEERING WORKSHOP OF HANOI POWER PLANT. PEOPLES VIET-NAM PICTORIAL,
HANOI #5 (15) 1958. OFFICIAL USE ONLY (17) CIA 388878



6-d. Hanoi Thermal Power Plant (target 5)

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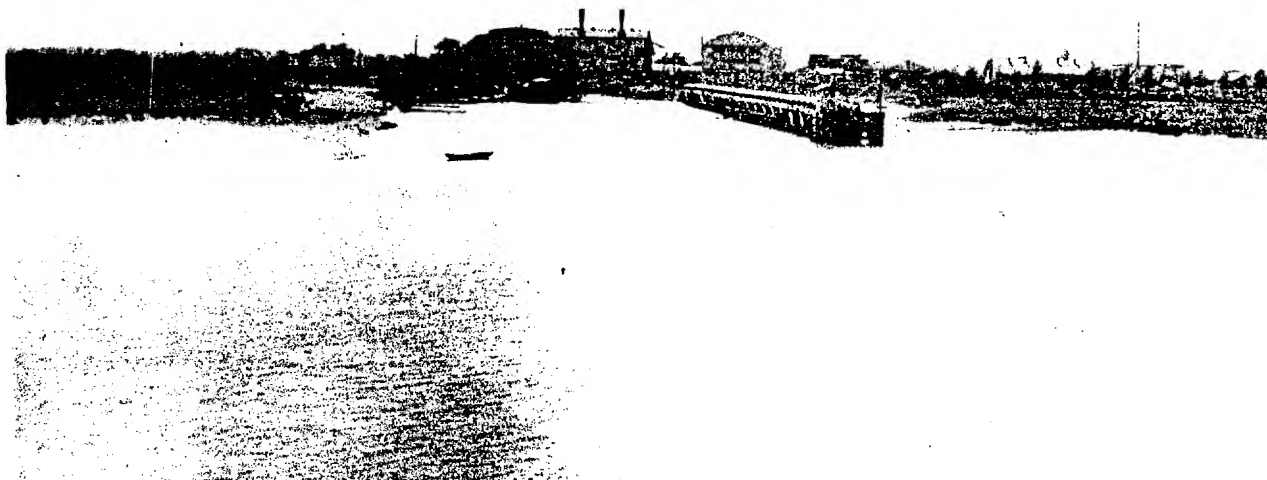
VIETNAM TONKING HAIPHONG 20 52 N 106 41 E

ELECTRICAL WORKS AT HAIPHONG. POWER STATION. 12 FEBRUARY 1960.

OFFICIAL USE ONLY

(17,30)

CIA 435386



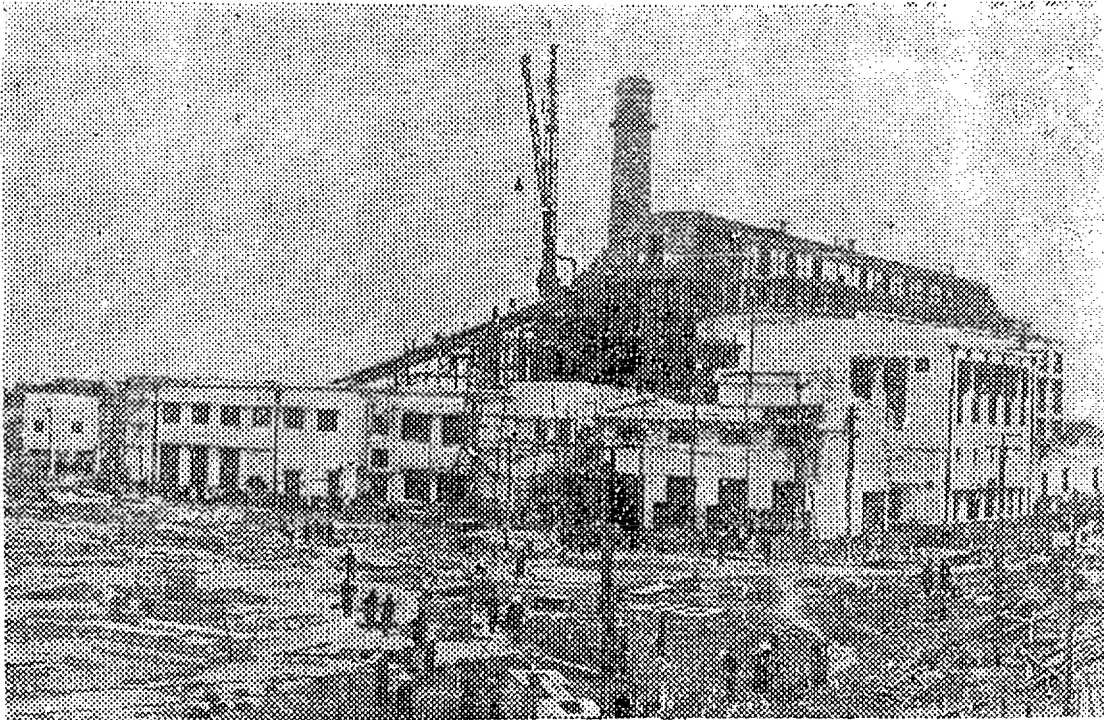
6-e. Haiphong Thermal Power Plant (target 7)

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VIETNAM TONKONG VIET TRI 21 18 N 105 26 E
THERMAL POWER PLANT. BAO TAN VIET HOA HANOI,
21 FEBRUARY 1960. (17) CIA 438210



6-f. Viet Tri Thermal Power Plant (target 8)

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6-g-1 Hanoi Railway/Highway Bridge (Doumer Bridge) (target 15)

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INDOCHINA TONKING HANOI 21 02 N 105 51 E
DOUMER BRIDGE ACROSS RED RIVER GUARDED BY SENEGALESE SOLDIERS (FRENCH-UNION FORCES).
PROBABLY 1953. CONFIDENTIAL CIA 128314



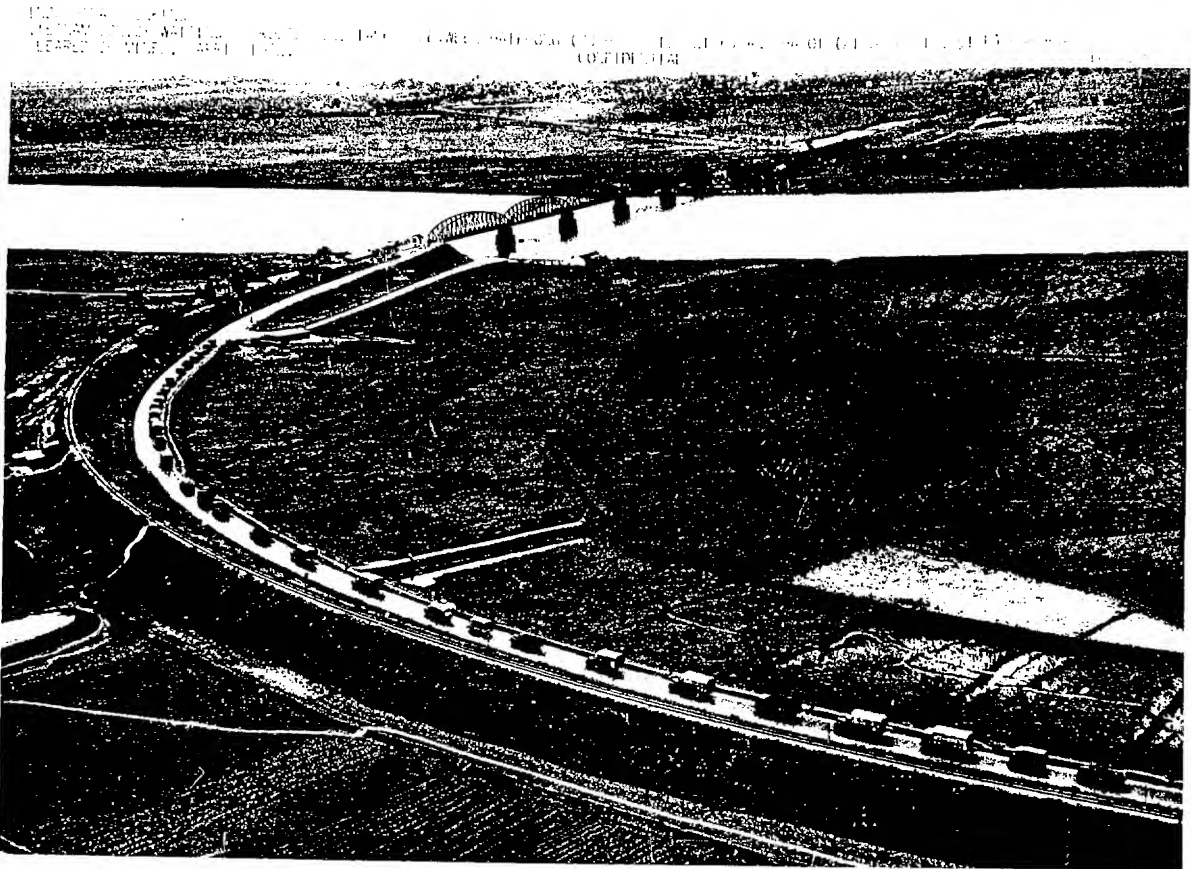
6-g-2 Hanoi Railway/Highway Bridge (Doumer Bridge) (target 15)

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78

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declassification

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6-h. Hai Duong Railway/Highway Bridge (target 17)

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downgrading and
declassification

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VIETNAM TONKING VIET-TRI 21 18 N 105 26 E

BRIDGE ON THE HANOI-LAO-KAY RAILROAD. PEOPLE'S

VIET-NAM #5, DECEMBER 1955

OFFICIAL USE ONLY

CIA 253539



6-i. Viet Tri Railway/Highway Bridge (target 18)

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6-j. Ninh Binh Railway/Highway Bridge (target 19)

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APPENDIX A

SELECTED TARGETS IN NORTH VIETNAM

Graphic Supplement

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II. Location of Selected Targets

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* In pocket inside back cover.

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SECRET**I. Notes on Regional Distribution of Targets**

The targets selected for this study emphasize the concentration of industrial and transportation facilities north of the Hanoi-Haiphong "axis." Half of the targets lie in or between the Hanoi and Haiphong areas. Of the total number of targets, 26 (84 percent) are within 50 nautical miles (93 kilometers) of Hanoi and Haiphong. Of these 26, only 2 lie south of the "axis." The remaining targets, although more widely scattered, also are considered to have intrinsic industrial or logistic importance.

On the basis of their geographic distribution, the targets selected fall into the following 10 areas, of which 6 are in the northern part of Vietnam, tributary to the core area, and 4 are in the western and southern parts of the country.

a. The Haiphong area (population 369,000, including suburbs) is a center for transshipment and storage and for a small number of strategic and consumer industries, most of them inherited from the French. The port facilities are the best in North Vietnam.

b. The Hanoi area (population 644,000, including suburbs) is a focus of commerce and administration and a military center. It is of growing importance as a center for manufacturing, but the area produces fewer items of strategic importance than for consumer use. The latter are made in a large number of small factories.

c. The Viet Tri area (population 21,500) is developing an industrial complex in which chemical and related industries, such as paper manufacturing, are emphasized.

d. The Thai Nguyen area is being developed as an iron and steel center on the basis of conveniently accessible resources of coking coal and iron ore. It is also a primary rear storage area for the military forces.

e. The Hon Gay--Cam Pha area (with its regional extensions) contains the bulk of North Vietnam's coal resources. For many years, coal in considerable quantity has been shipped out from the mines. For targeting purposes the mines and dispersed shipping facilities are of only marginal interest; the power plants appear to be the best targets available.

f. The Red River port of Nam Dinh (population 86,000), North Vietnam's third city, is the largest center within the predominantly agricultural southern delta region of Tonkin. The Nam Dinh textile plant, here represented by its power plant, is the largest textile producer in North Vietnam and the most important factory in the entire consumer-industry category.

g. The smaller provincial agricultural region centering on Vinh (population 44,000) is being developed as a regional industrial center, but in the short run it is of greater importance as an agricultural area and as a staging area for movement of men and materiel into central Laos.

h. Dong Hoi (population less than 10,000), represented in this list by its important airfield, probably is the most important town of the southern extension of North Vietnam between Vinh and the 17th parallel. Main roads leading to South Vietnam and hill routes to southern Laos are served from Dong Hoi.

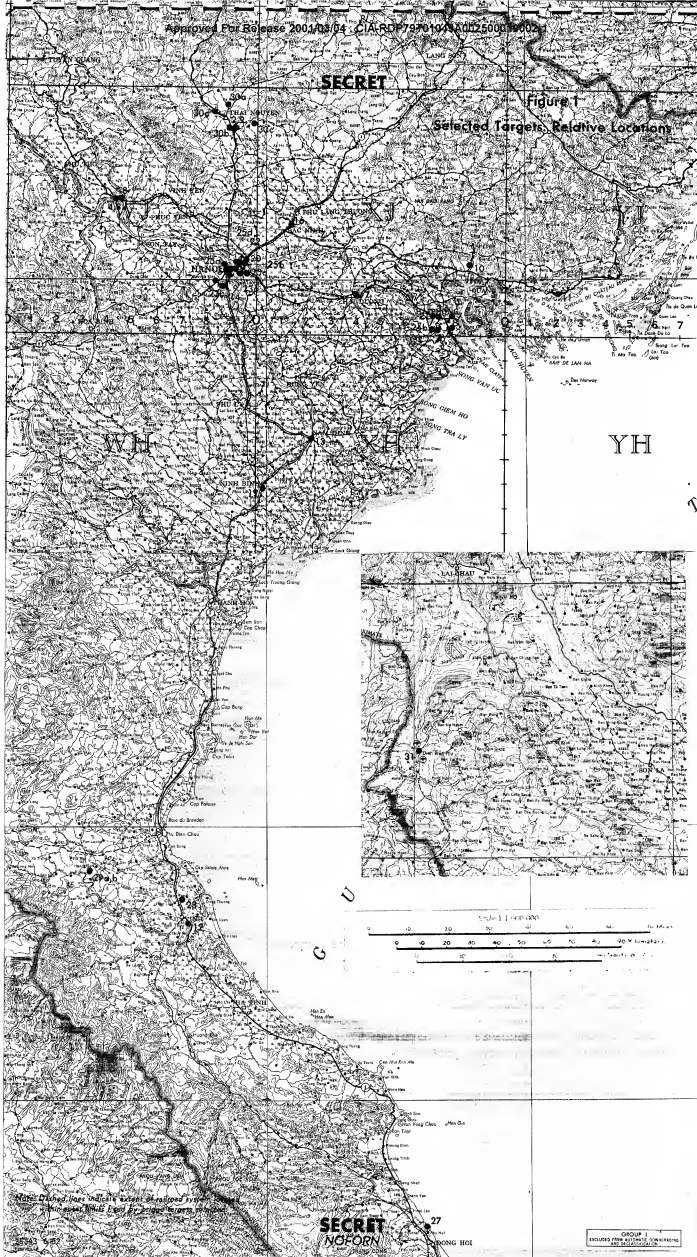
i. The upper Black River valley of western North Vietnam is here represented by the forward transshipment and staging area of Dien Bien Phu, which is less than 10 kilometers from the Laotian border. Dien Bien Phu is at the southwestern corner of a strategic triangle delimited by Lai Chau on the north and Son La on the east. Facilities for strategic control and use of the upper Black River valley region have been developed around these three centers. Dien Bien Phu airfield, which had few or no facilities in September 1961, is now reported to be a very good field. Despite the better equipment found at Na San airfield, 18 kilometers southeast of Son La, Dien Bien Phu airfield has been selected as a target because the psychological importance of an attack on this historic area would be considerable. Logistic considerations, however, suggest the selection of Na San airfield (21-13-12N/104-01-57E) as an alternative.

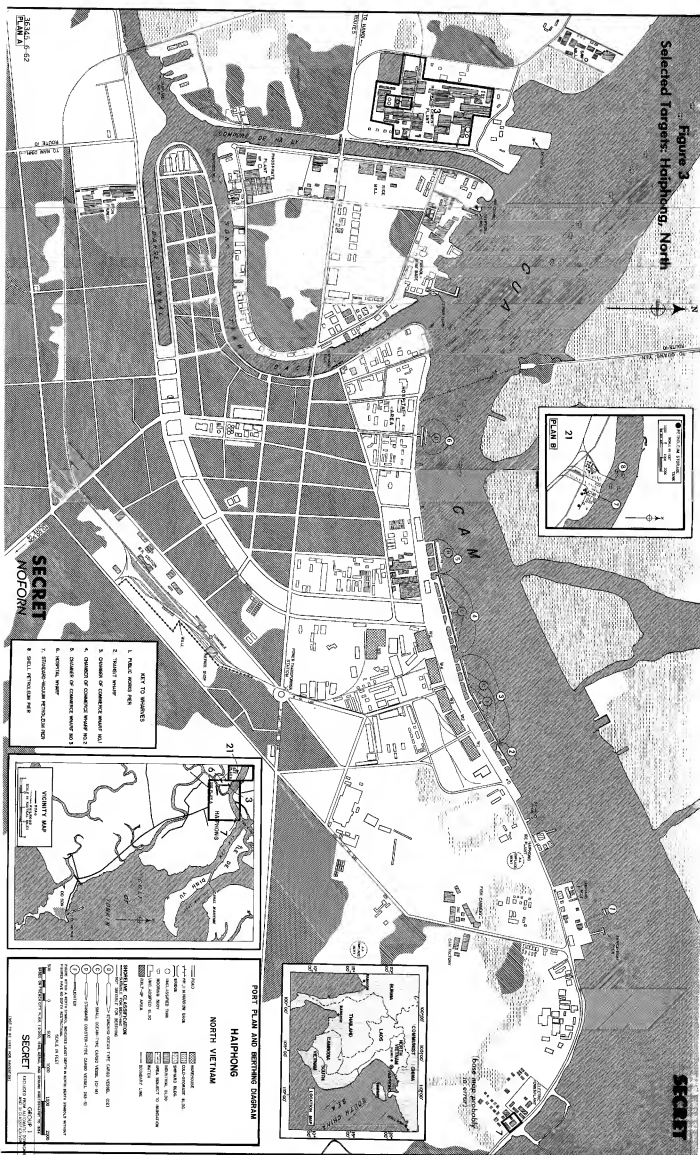
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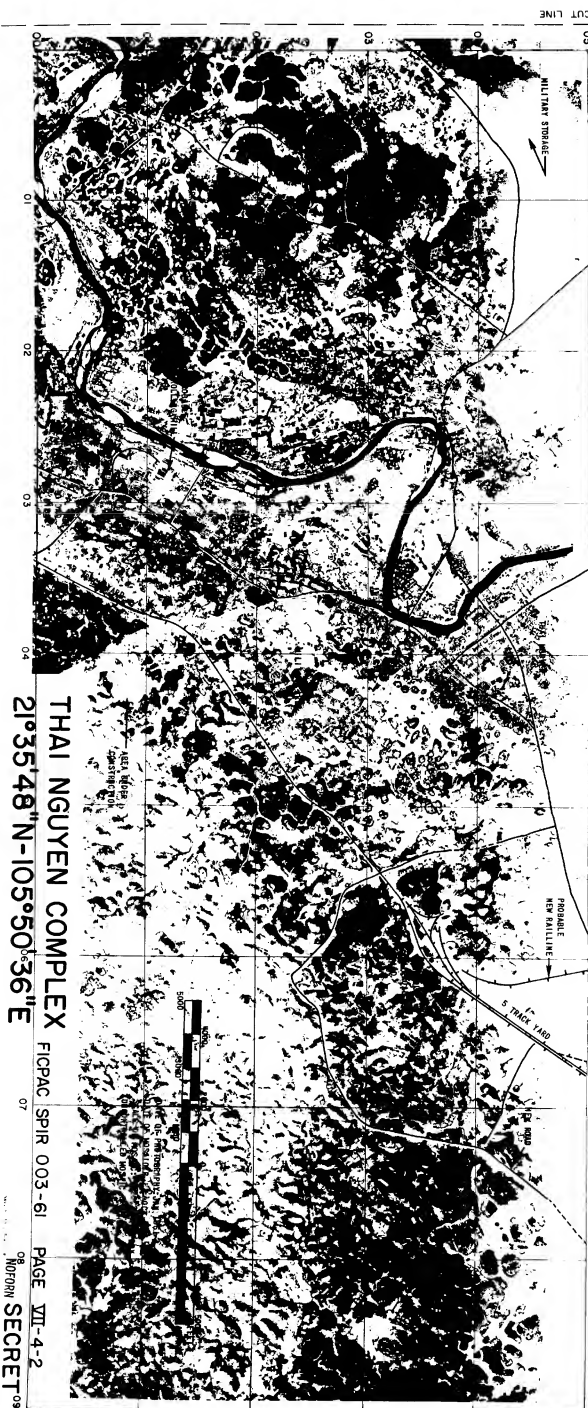
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Figure 1
Selected Targets, Relative Locations











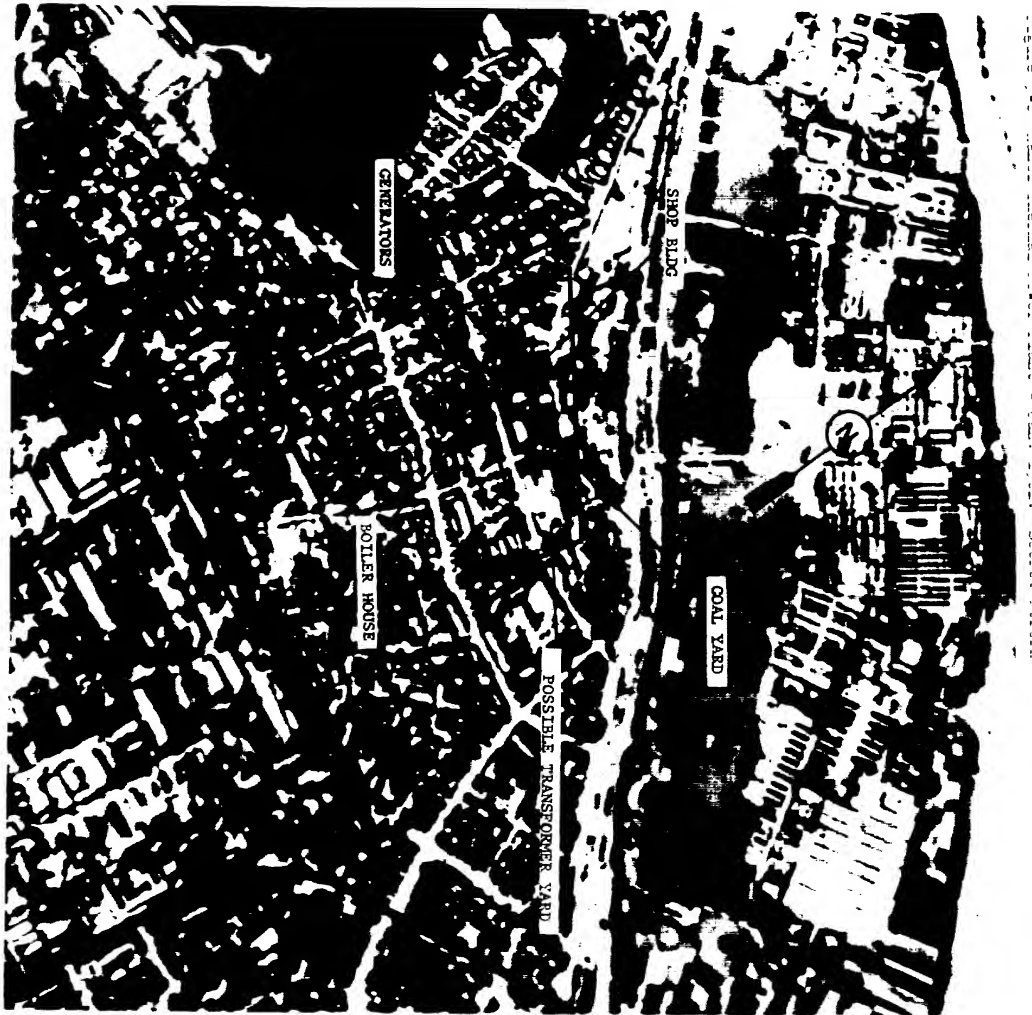


Figure 1-1. Aerial View of Power Plant - (See Also, Secret Notes)

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Figure 2-d. Reingung Thermal Power Plant - Aug. 1979. Secret/NOFORN

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Figure 2-c: Ion Gay Thermal Power Plant - Jan. 1961. Secret/Noform



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Figure 2-1 Ben Tuay Thermal Power Plant - Jan. 1961. Secret/Noform

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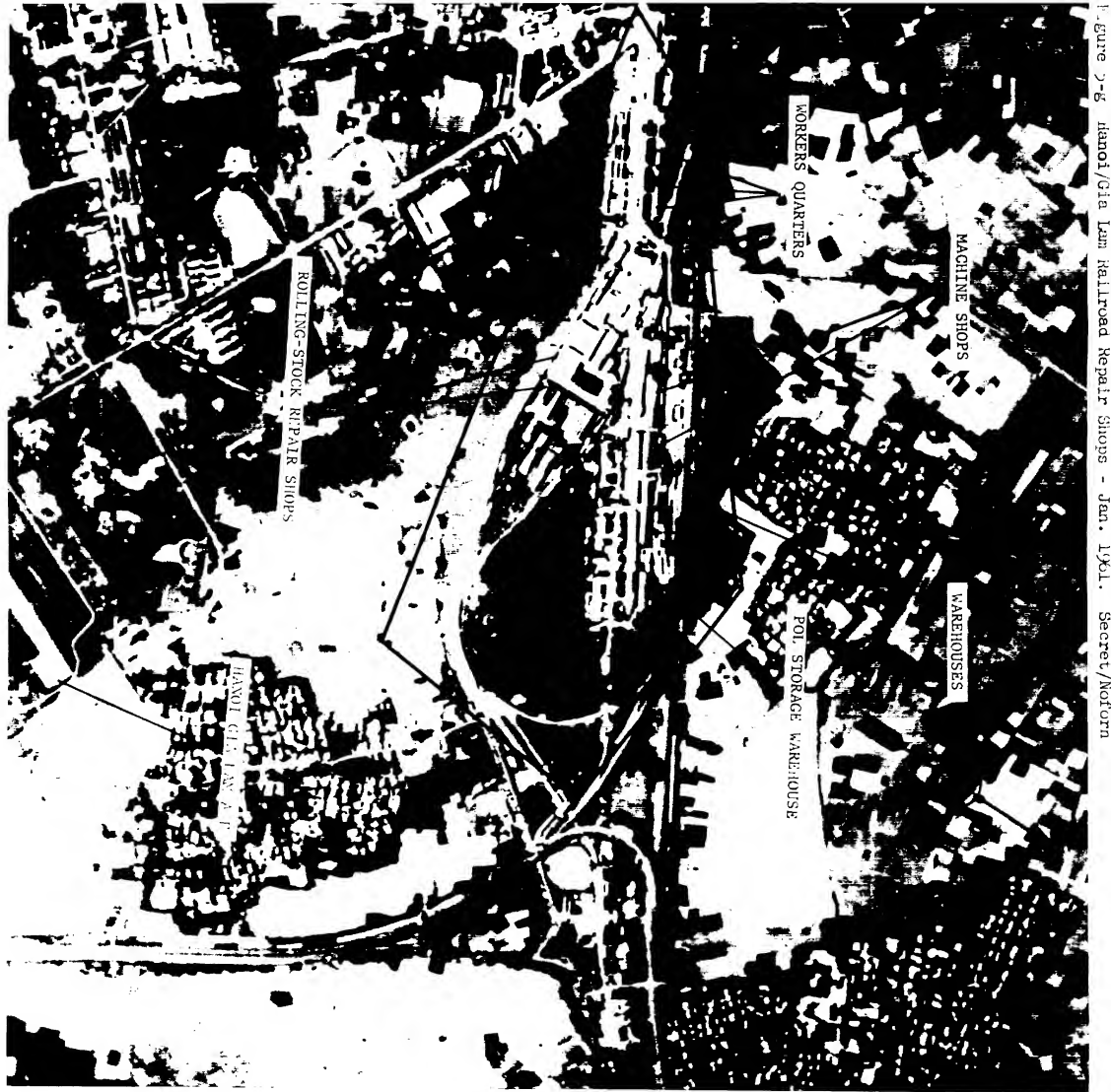


Figure 2-6. Hanoi/Gia Lam Railroad Repair Shops - Jan. 1961. Secret/Noform

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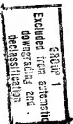
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Figure 5-2 Hanoi RR/RY Bridge, Red River - Jan. 1961. Secret/NoForN

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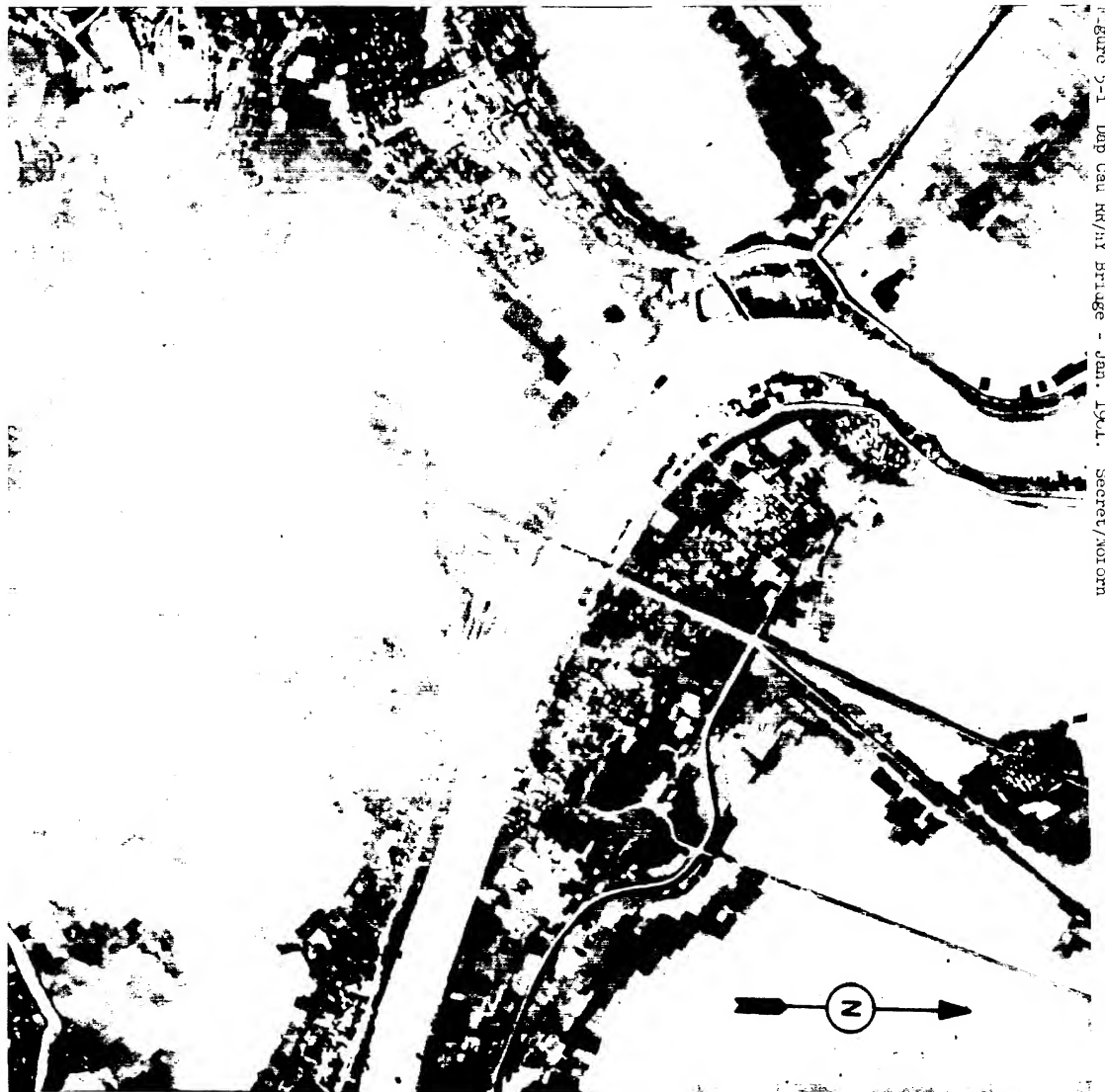


Figure 5-1. Dap Cau RR/AY Bridge - Jan. 1961. Secret/Noform

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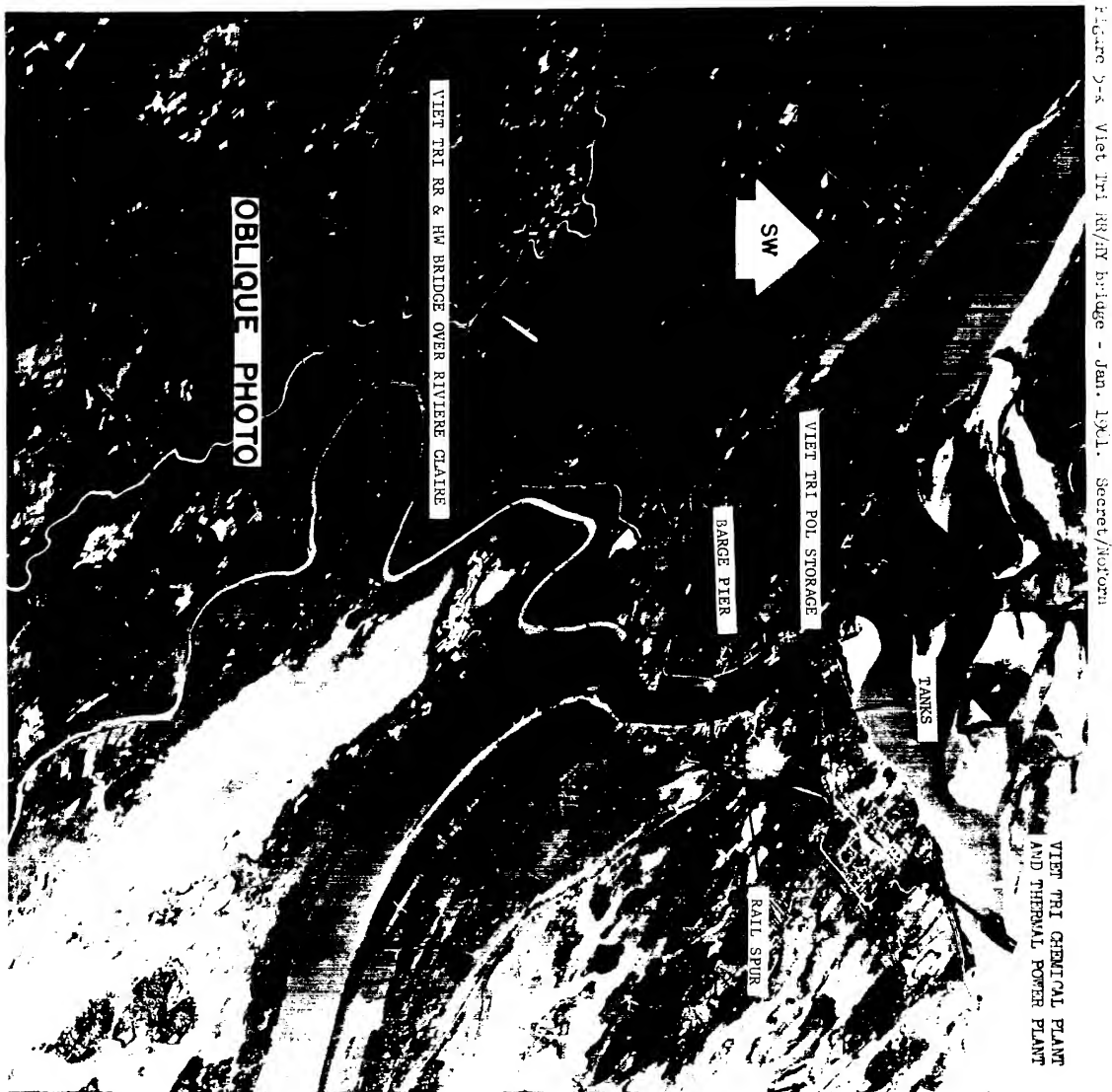
Figure 2-2: Hai Duong Rd/AT bridge - Jan. 1961. Secret/Noform

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Figure 2-1. Hanoi Binh Tay bridge - Jan. 1961. Secret/NoForN

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Figure 3-4. Ipani RR/RY bridge, Canal des Rapides - Jan. 1961. Secret/NoFORN

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Figure 7-11 Hainan Petroleum Products Storage Area - Aug. 1959. Secret/NoFORN

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Figure 2-2: Hanoi/Gia Lam AFB - Jan. 1961. Secret/NOFORN

HANOI REPAIR BRIDGE

HANOI REPAIR BRIDGE

POL. STORAGE

HANGARS
CONTROL TOWER

RUNWAY II

POSS. AMMO STORAGE

AREA U/C (JAN 1961)



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Figure 3-9 Hanuul/hec Mai A/F - Jan. 1961. Secret/Noform

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Figure 2-1 Hai Phong/Cat Bi A/E - Sept. 1972. Secret/Noform

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Figure 2-5. Hainan/Kien An A/F - Sept. 1979. Secret//NoFORN

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Figure 3-4 Hanoi Army Supply Complex: Canal des Rapides - Jan. 1961. Secret//NOFORN

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Figure 5-v. 1961 Army Supply Complex: Co. 1 - Jan. 1961. Secret/Noform



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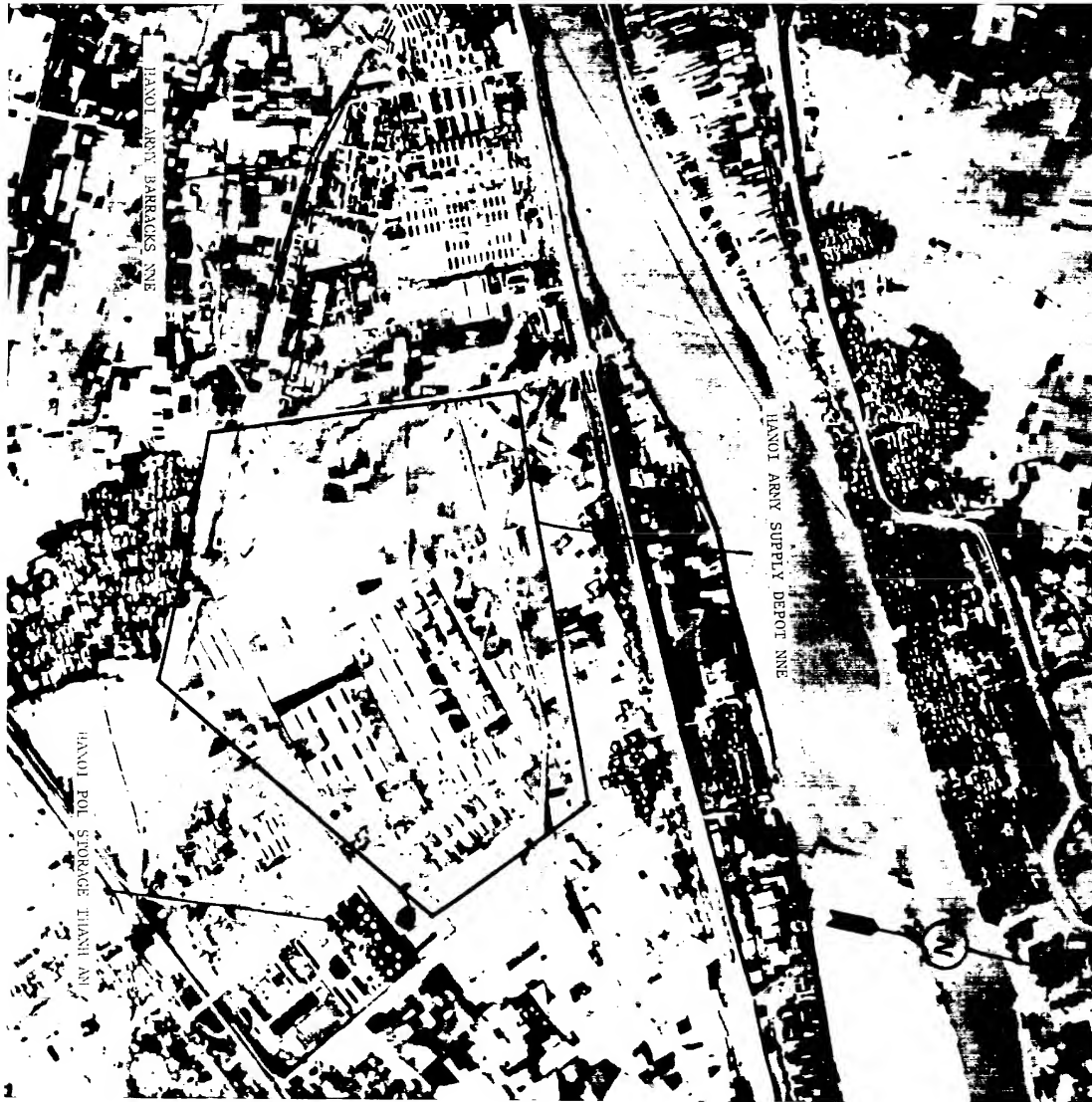


Figure 3-4 Hanoi Army Supply Complex, North-Vietnam - Jan. 1961. Source/Vietnam

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Figure 3-8: Hsinchuang Ammunition Depot: Kien An SW - Jan. 1961. Secret/NoFORN

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Figure 5-3 Dong Loi AFB - July 1961. Secret/Noform

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Figure 2-4. Vinh AFB - July 1961. Secret/NOFORN

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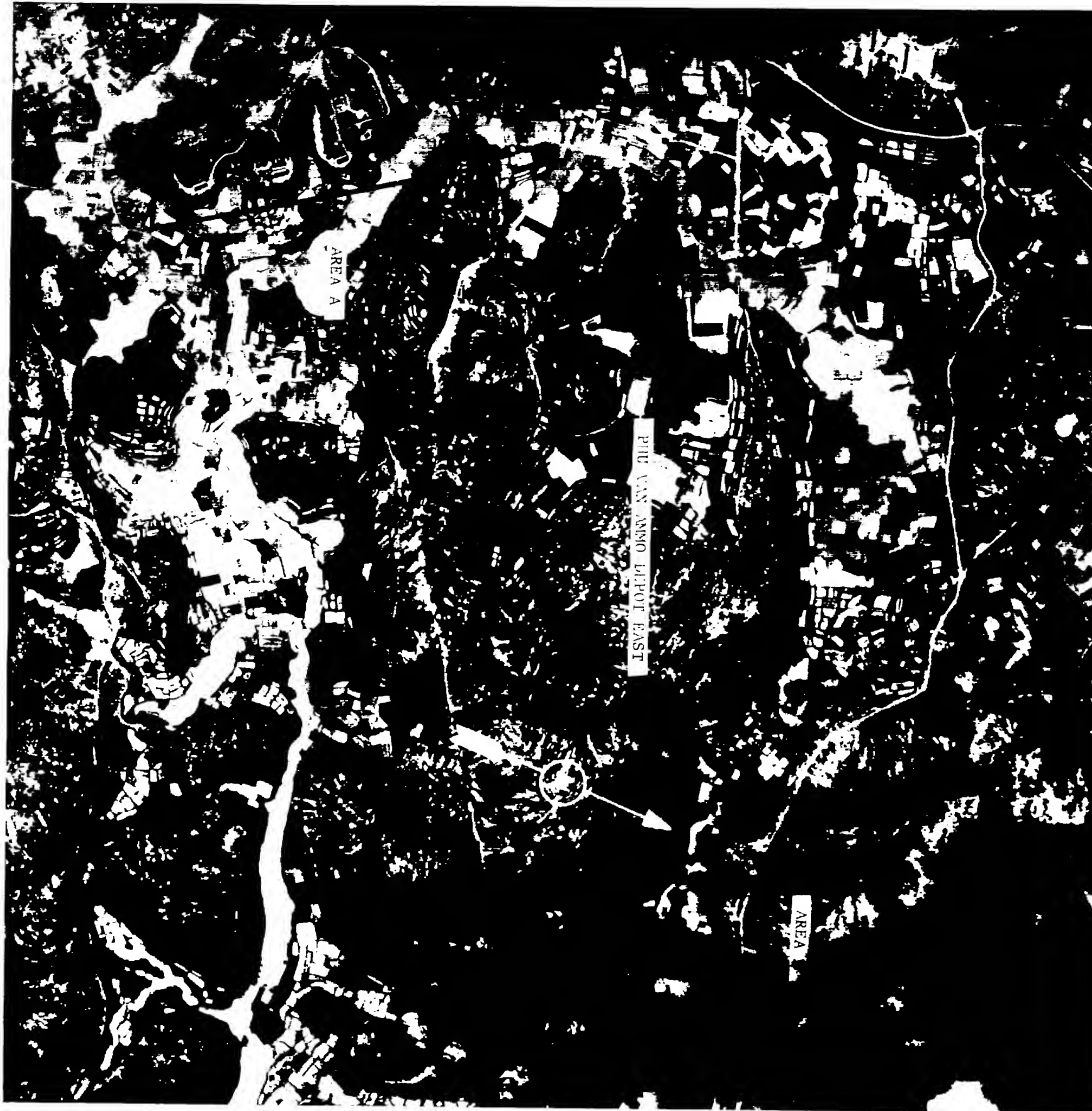


Figure 5-aa Phu Van Ammunition Depot East - Jan. 1961. Secret/Noform

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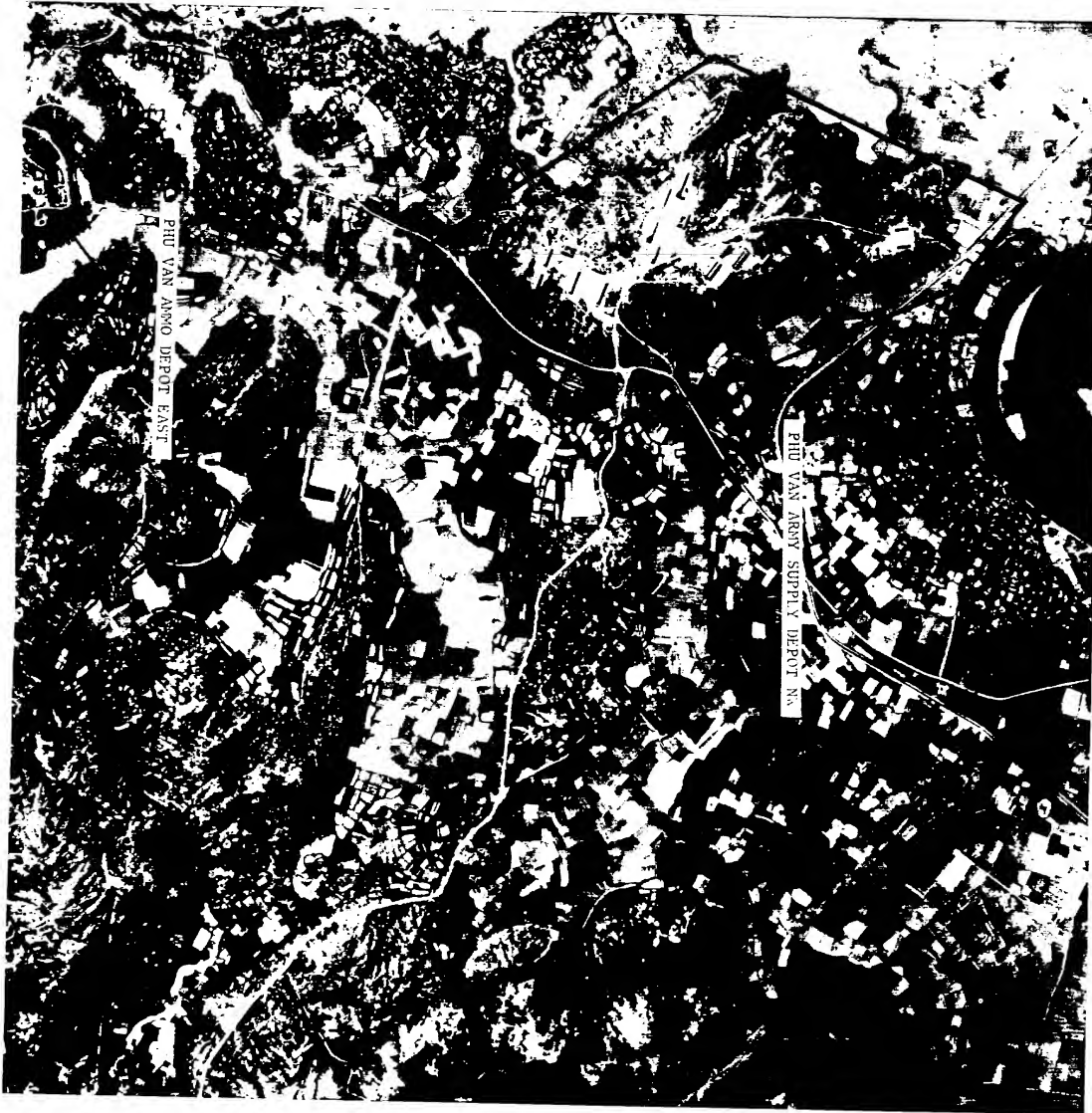


Figure 3-06 Phu Van Army Supply Depot Northwest - Jan. 1961. Secret/NOFORN

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Figure 2-cc Thai Nguyen Army Supply Complex: Main Supply Depot - Jan. 1961. Secret/Noform

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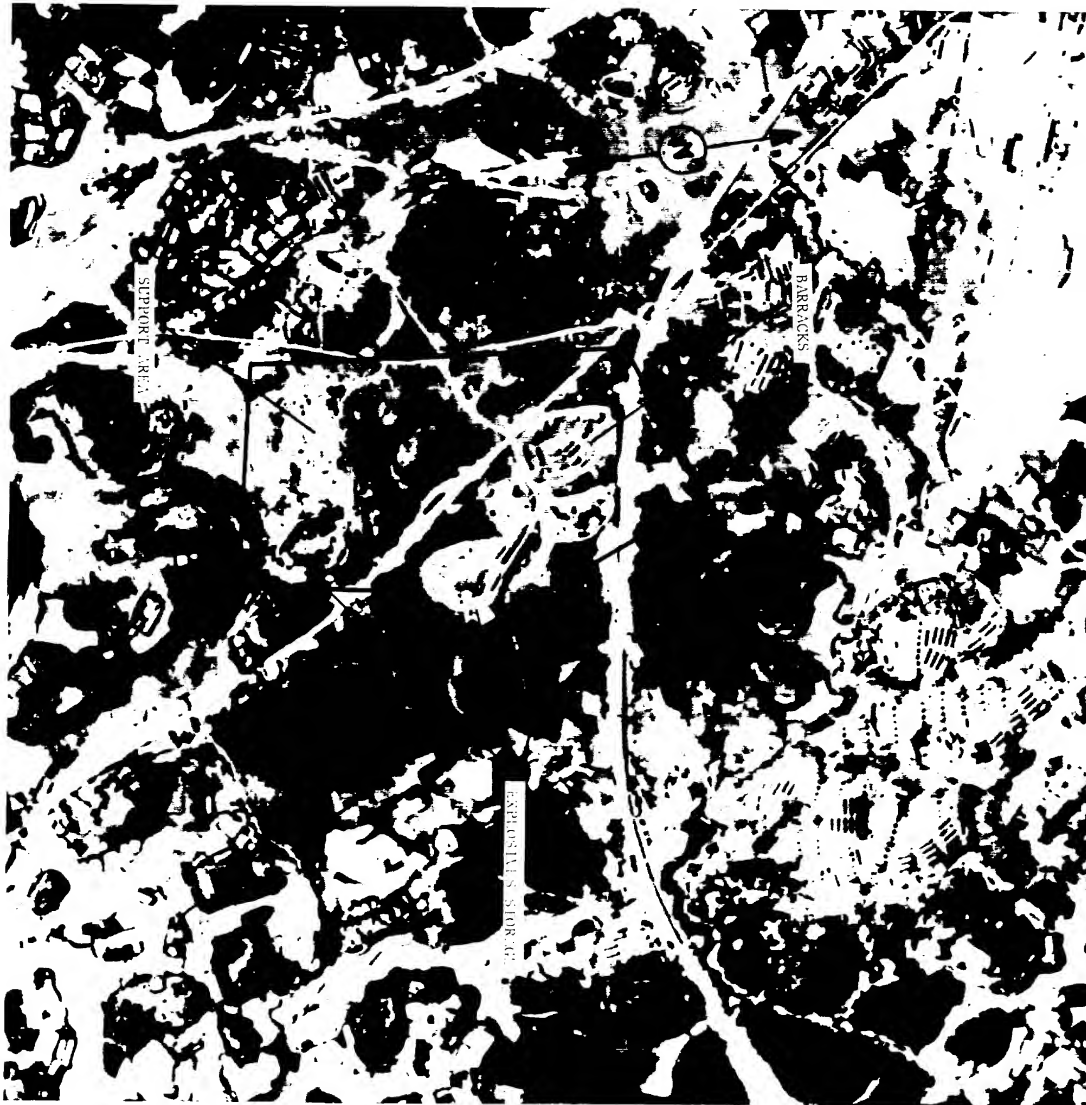
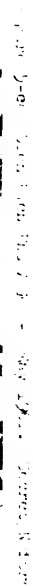


Figure 3-4d Thai Nguyen Army Supply Complex, Explosives Storage - Jan. 1961. Secret/Holcom.

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Figure 2A. Hanoi: Dai No Radio Station

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Figure 5c. Hecolt No. 10 Radio Facility as

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SELECTED TARGETS IN NORTH VIETNAM

(Graphic Supplement) : to 62-46

Appendix A. Geographic Location of Selected Targets

Appendix B. Graphic Presentation of Selected Targets

Central Intelligence Agency
Office of Research and Reports

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